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NOTICES.—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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The Business Point of View

THE proceedings of the Society of Chemical Industry in Liverpool last week fell into three sections—the addresses and visits to works, the social gatherings, and the business conference. The first were all excellent, without exception; so were the second; the third was more interesting than it generally is, and a few observations may be made on some of the points raised. Dr. Levinstein included the criticism arising out of the annual report and balance sheet among the proofs of the virility of the Society. We think he was entirely right. Anything is better than indifference, and an annual conference in which nothing is said about policy or problems and everything is taken for granted does not suggest vitality. The criticism of the balance sheet and the Society's publication policy did not appear to be too cordially welcomed from the official side. Yet it was really a sign of life, and Dr. Cullen has done the Society a service in breaking through the habit of silence and turning the conference for half an hour or so into a live debating chamber. When one considers the large membership of the Society and the wide area covered by its sections, it is rather remarkable that on the only occasion in the year on which the members come together so little time should be given to the consideration of Society policy. The annual meeting should give a lead and stimulus every year to the new council, and the failure to utilise it in this sense is a great opportunity lost. If, in fact, one or two definite matters of policy were selected for open debate and suggestion every year we believe the discussions would soon be classed among the most interesting and useful features of the annual meeting. At present it needs real moral courage to get up and ask for explanations, and the few members who exercised their rights at Liverpool in this respect set a good fashion which it would be to the benefit of the Society to develop.

This year, for example, there were two really important matters worth the personal attention of every member, but about which little if anything would have been heard but for the courage of one or two members. The first is the continued decline of membership. In four years it has fallen, by consistent steps, from 5,654 to 4,830. This matter would have been worth a session to itself, and the collective knowledge of the conference might have thrown some light on the real causes and probably suggested useful remedies Business houses do not accept a continued decline of turnover in any fatalistic spirit; they take their coats off and get to work to stop the rot. Yet one heard at Liverpool nothing but a pious hope that somehow and sometime matters might improve. The other point was finance. Whether the Council foresaw or not the loss of five or six thousand pounds is a detail; the fact is that the Society is so much the poorer. Yet, here again little would have been heard of the matter but for the demand for information. The treasurer's explanation put a more complacent look on things, but in the face of a heavy loss a spirit of real concern is healthier than a spirit of complacence. Apart from the strictly financial aspect, there is the Council's publication policy itself. From opinions which reach us from widely different quarters it is clear that a large proportion of the members have grave doubts on the subject. And it may be well to add that we have done more to restrain than to excite criticism.

As a result of the discussion this year there are three points which seem to us worthy of the Society's attention. In the first case, criticism ought to be welcomed rather than resented. It indicates, at least, a real interest in the Society's affairs, it is usually well-meant, and at the worst it gives an opportunity for removing mistaken impressions and increasing confidence in the management. Secondly, the annual meeting is, as one member put it, the Parliament of the Society, and a general review of Society policy in the presence of the whole body could do nothing but good. Thirdly, it was laid down as a sound rule that no vital departure should be made in the Society's policy until the matter had been referred to the Sections. That is simply democratic procedure, and what has happened in connection with the publications has undoubtedly strengthened the feeling of the Sections in favour of it.

Colour Users and Chemicals

THE annual report for the year ended April 30 of the Colour Users' Association is a document of great interest. It is surprising to find as the result of friendly negotiations between the Association and the Board of Trade how many modifications have been made in the list of scheduled chemicals under Part I of the Safeguarding of Industries Act. Several substances have been removed from the list and others have had the letter "R" attached to them. The latter change means that these chemicals are free from duty when of the quality used in industry, and this is substantially equivalent to their removal so far as members of the Association are concerned.

Considerable comment has been made on the very costly character of the proceedings before the Official Referee, but some figures announced now for the first time indicate that the gains have been considerable. Of the six trials before the Referee the Association contributed toward the cost of three a sum of £596. It is difficult, the report states, to estimate the gain that has accrued to individual members, but on the formaldehyde case alone the gain in remission of the duty on the total consumption of this article in the free state, and as an admixture in the manufacture of Rongalite, amounts to £3,700 per annum, whilst in the case of one of the constituent associations the gain in remission of duty is estimated at approximately £20,000 per annum. As a decision has now been obtained on the major portion of the chemicals of interest to the Association, the Committee is of opinion that no good purpose would be served by taking any further actions before the Referee. They recommend that as that portion of the Act in which the Association is interested comes to an end in August, 1926, attention should be confined to watching the progress of legislation and taking early steps, in the event of the continuance of the Act being contemplated, to secure a simplification of the methods of procedure by which the inclusion or exclusion of particular chemicals is regulated.

In dealing with the proposed agreement between the B.D.C. and the I.G., the interesting fact is announced that a sub-committee has been conferring with the board of directors of the B.D.C. and with the Board of Trade, and that while the draft agreement has not been produced full discussions have taken place on the main headings. The Colour Users' Council has strongly objected to many of the proposals. It is understood that negotiations are still proceeding, but no draft agreement has yet been produced to the Association. It is, however, interesting to learn that the Association has received an assurance from the Government that they will be consulted before any agreement is ratified by the Board of Trade, and further that the Chairman of the B.D.C. has given an undertaking that he will notify the Chairman of the Development Committee (on which the Association is represented) before any agreement is concluded in order that that Committee may consider the proposals.

Some misconception appears to have arisen as to the method followed by the Government agents in the distribution of Reparation Dyestuffs. All deliveries, it is stated, are reserved for consumers only for seven days after arrival, and during this period members have an opportunity of taking up the dyestuffs before they are offered to merchants and others. A further interesting point is that efforts are still being made to insure that the accredited importers of German dyes shall have an interest in Reparations, as the Council realises that they perform services of value to consumers, particularly to those who are unable to establish technical and intelligence staffs in their own works. The Reparation Pricing Committee, we learn, is now functioning in accordance with lines laid down by the Board of Trade, namely, that Reparation prices shall not be higher than the prices charged for direct imports. The Association has strongly contended that a maximum factor of three times pre-war should apply to the pricing of Reparation colours, but so far the Board of Trade has not seen its way to accede to this.

Electrolytic Caustic Soda and Solvay Processes

IN a notable article appearing in our issue of June 28, our contributor, Mr. P. Parrish, not only dealt with some interesting factors bearing upon the financial aspect of the electrolytic caustic and the Solvay ammonia-soda processes, but contrasted the two methods of production and developed some very interesting points. It was indicated that caustic soda could be produced more cheaply by the electrolytic caustic soda process than by any other, provided that suitable markets could be found for the secondary products resulting from the utilisation of the hydrogen and chlorine generated. It was further shown that by continued improvement of plant, by the application of the most approved chemical engineering practice, and by efficient control, the chemical manufacturers operating the Solvay ammonia-soda process for the production of soda ash had consolidated their position very materially. Indeed, there is reason to believe that the major requirements of the world in the matter of soda ash will, for some time at any rate, still continue to be met by the product of the Solvay process. Moreover, these firms have not been oblivious of the merits of the electrolytic caustic soda process, for it is known that in this country they control very largely the works producing caustic soda and derivative products arising from the electrolysis of a saturated brine.

Apart from the purely commercial phase, there are many interesting technical details to which it was obviously impossible to make reference in a single article. Arrangements have been made for further contributions to appear, in order to satisfy the curiosity which has been evinced by our readers. In these subsequent articles it is proposed to deal with some of the further problems involved in the electrolysis of a saturated solution of salt. The methods of utilising the by-products of the electrolytic process, the defect of diaphragm cells as regards higher voltage per cell, and increased cost of maintenance, by reason of the absence of durability of the diaphragm, the advantages and disadvantages of the Castner-Kellner and Solvay cells (both of which employ a mercury electrode in the cathode compartment), the extent to which cheap electric power and fuel for evaporation

affect the production costs of electrolytic caustic soda, the best type of evaporator, the most suitable arrangements for dealing with the deposited salt which is thrown out of solution during evaporation, the method of washing with minimum dilution of the adhering caustic soda—these and many other aspects will be treated in a practical manner and in a way which we hope will prove of peculiar interest to our readers. It is only by a critical examination of competitive processes that the merits and demerits can be correctly visualised.

An International Gathering

THE annual dinner of the Association of British Chemical Manufacturers, held at Wembley on Thursday evening, took the form of an international gathering of quite uncommon interest. In addition to being representative of the production side of British chemistry, largely involving of necessity the scientific side, there were representatives present from the principal European countries, the Far East, and the United States. These included Professor Bancroft (vice-president of the International Union of Pure and Applied Chemistry), Mr. Percy Cazalet (Chemical, Metallurgical, and Mining Society of South Africa), Prince Conti (president of the Italian Society of Chemical Industry), Professor Jedlicka (president of the Chemical Society of Czecho-Slovakia), Professor Naoto Kameyama (Japanese Society of Chemical Industry), Professor Riko Majima (Japanese Chemical Society), M. Roche (French Society of Chemical Industry), Dr. J. G. W. Sieger (Netherlands Chemical Society), Dr. Valeur (French Chemical Society), Professor A. von Weinberg (vice-president of the German Chemical Society), and many others.

One advantage of such a gathering is that it is informal. Meeting round a conference table these representative visitors might be hampered in the exchange of opinions; sitting together at dinner, they would have the pleasantest opportunities of making acquaintances and learning much from and about one another. It was a happy idea to bring so many distinguished visitors together at Wembley, and Sir Max Muspratt has rarely, if ever, had a more interesting gathering to preside over. One object of the visit was, of course, to enable the guests to see the Chemical Section under expert guidance. The exhibit would, we imagine, be something of a revelation as to the present range of chemical production and as to the quality of British products. The presence of a distinguished German representative is welcome as showing an approach to a restoration of unity in one of the greatest branches of science.

Chemical Trade in June

THE official figures for chemical and related substances imported and exported during June show something of a decline. This is in accordance with the general tendency manifested during the month, the total figures for the general trade of the country showing a falling-off in exports and imports as announced last week. It is rather notable, therefore, that the value of chemicals imported actually shows an increase from £929,000 to £1,019,000 compared with June of last year. This would appear to be mainly due to an increase in the quantities of sodium compounds, including nitrate, and calcium carbide. The total figure is, however, some £360,000 below that for the previous month. Turning to the exports, the total of £2,422,000 is £520,000 below the previous month's values and £480,000 below that of June last year. It must be remembered that the substances to which the decrease appears to be mainly due, sulphuric acid, sulphate of ammonia and various coal tar products, were being exported a year ago in particularly satisfactory amounts, so that the present figures are not so unfavourable as they might at first sight appear.

Points from Our News Pages

The account of the Annual Meeting of the Society of Chemical Industry in Liverpool is concluded with further notes, reports of papers, and a page of photographs (p. 56).

The events of the week at Wembley include the visit of 350 students of the Institute of Chemistry to the Chemical Section and the annual dinner of the A.B.C.M. (p. 59).

Sir Ernest Benn in his article this week deals with the housing problem (p. 64).

The work of the Institution of Chemical Engineers during the first year of its existence was favourably reviewed at the annual meeting on Thursday, over which Sir Arthur Duckham presided (p. 65).

The Board of Trade returns for June show a decrease both in chemical exports and in chemical imports (p. 65).

Letters are published on "Analysis of Brass and Gun Metal" (C. C. D.) and "The Society of Chemical Industry" (J. L. Lager) (p. 66).

The London market shows continued improvement and the position can be taken as satisfactory.

Books Received

THE PLANNING, ERECTION AND OPERATION OF MODERN OPEN HEARTH STEELWORKS. By Hubert Hermanns. London: Ernest Benn, Ltd. Pp. 308. 42s.

ATOMS AND RAYS. By Sir Oliver Lodge. London: Ernest Benn, Ltd. Pp. 208. 21s.

The Calendar

July 22	Colour Users' Association: Annual General Meeting. 12 noon.	Milton Hall, Deansgate, Manchester.

Research Fellowships

THE Imperial College of Science and Technology announces the following awards for the year 1924-25:—

By the Governing Body of the College—The Gas Light and Coke Company's Research Fellowship to Mr. F. R. Weston, A.R.C.S. (Chemistry), for a continuation of his research on "The Spectroscopic Investigation of the Flames of Carbon Monoxide and Hydrogen and matters cognate thereto," value £200 (renewal.) By the Trustees of the Beit Fellowships for Scientific Research—Research Fellowships to Mr. O. M. B. Bulman, A.R.C.S., B.Sc., D.I.C. (Geology), for a continuation of his work on "Stratigraphical Geology; The Fauna of the Shineton Shales" (renewal); Mr. W. E. Downey, D.I.C. (Chemistry), Ph.D., for research on "Photochemical Problems"; Mr. L. A. Harvey, A.R.C.S., B.Sc., D.I.C., for research on "The Nature and Function of the Cytoplastic Inclusions (Nutochrondria and Golgi bodies) in the Cells of Vertebrates"; Mr. R. Quarendon, A.R.C.S., B.Sc., for research on "The Combustion of Gases in Nitrous Oxide"; each of the value of £250. Mr. Downey, who obtains a renewal of the £250 Fellowship, was a student at Huddersfield College, 1912-16; Huddersfield Technical College, 1917-19 (evenings); Assistant Chemist in Works, 1917-21; since 1921 at Imperial College, D.I.C., Chemistry, Ph.D., Chemistry.

Society of Chemical Industry in Liverpool

After-Impressions of a Great Meeting

We give below further notes and reports on the proceedings at the Annual Meeting of the Society of Chemical Industry in Liverpool, which concluded on Saturday, July 12.

WHEN on Friday evening (or was it Saturday morning ?) we were returning from that delightful evening at Port Sunlight—the last of the week's city functions—and the moon smiled pleasantly down on us as we crossed the Mersey by a late boat, full of kindly feelings towards one another and to mankind in general, everyone was confidentially assuring his neighbour that never in the history of the Society had there ever been a meeting like unto the Liverpool meeting of 1924. Probably, under similar conditions, the same thing has been said many times before. But this year it seemed to be said with rather more conviction ; even more significant, it was still being said the morning after. Without risking comparisons it may safely be stated that the Liverpool meeting was a complete and most stimulating success. Its success, moreover, was progressive. Every event seemed a bit better than its predecessor. There was no halt or hitch at any stage ; nothing but interest and vitality while it lasted, nothing but satisfaction when it was over.

As to the effect, the verdict was unanimous ; as to the cause, opinions may slightly vary in detail. Was it, for example, that lofty utterance of Lord Leverhulme that set everything at so high a level ; or the perfection of the local committee's management of the programme ; or the admitted excellence of the technical papers ; or the splendid hospitality of the three great firms who entertained the members ; or the abundant good humour and light speaking that distinguished the luncheons and the dinners ; or—the Hon. Treasurer, we believe, inclines to this theory—the activating effect of a certain article in THE CHEMICAL AGE, which gave such a healthily provocative interest to the very first session ? Probably all contributed their share. What really matters is that the total effect could scarcely have been improved on. Liverpool in 1924 will for ever recall three things—a great president, a great meeting, a great memory.

The Messel Lecture

Perhaps the most gratifying surprise of the week was the Messel Lecture. Lord Leverhulme had taken as his subject, "Science, Religion and Workshop," much too general a title to indicate any definite line of treatment. Many expected it to be a business talk, full of shrewd worldly wisdom, with reflections of a more or less conventional character. It proved instead to be the utterance of a prophet, seeing life in very large terms from a high plane ; an arresting challenge to the religious and commercial platitudes of his time. It revealed Lord Leverhulme as a deep and individual thinker on fundamentals.

Two great points stand out in our recollection. The first was the lecturer's plea for the man behind the machine as something much greater than the machine itself, and his appreciation of the human element in industry. His picture of the village blacksmith singing and whistling at his work, though underfed and underpaid, set against the modern mechanic with no taste for either, and of the old stage-coach driver who cracked his jokes with guard and ostler, contrasted with the modern motor or tramcar driver, served as a picturesque reminder of what we have lost on the human side in gaining greater mechanical efficiency. Both Capital and Labour were told plainly that there could be no permanent intake without corresponding outflow, and that the aim of the one to get the greatest amount of work in the longest hours for the minimum wage was as opposed to scientific truth as the policy of the other to give the smallest amount of work in the shortest hours for the maximum pay.

Even greater and more daring was Lord Leverhulme's second point that the moral laws for the ordering of community life, embodied in the Sermon on the Mount, were as sure in their operation as the physical laws on which the engineer depends. The latter, in building his bridges or planning his constructions, relied implicitly on his physical laws, like that of gravitation, and knew that if he applied them faithfully he would not be let down. But professors of religion had not the faith to base their life and teaching on the ethical laws of Christianity which they professed with anything approaching the same assurance. It was at this stage that the lecture seemed to us to reach its highest point—its exposition of the idea that the altruism of "the greatest ethical scientist the world has ever produced" was not to be treated as emotion or sentiment, but as cold immutable scientific truth, and its warning that to neglect or disregard the scientific ethical truths he proclaimed must bring disaster upon society as inevitably as would disregard of physical law in the physical realm. It was, in short, a plea for the recognition of the scientific basis of Christian ethics, stated with a dignity and force that could hardly have been excelled. The lecture was a contribution to thinking on spiritual fundamentals not readily to be forgotten.

It was, in some ways, a strange message for such a gathering. Yet, oddly enough, it was the more spiritual teaching of the lecture to which the hearers most quickly responded. Apart from its matter, the composition and delivery of the lecture were sufficiently notable. Lord Leverhulme, we are told, wrote the original draft all out himself, and it obviously embodied the convictions of his life. It occupied over an hour in delivery, and its literary form alone would have brought no discredit to a man of letters. As he stood at the desk, his mind all alight with his theme, his worn keen features flushed with energy, pouring out with a simple confidence the things in which he had believed, this audience of critical minds surrendered completely to his appeal, and when he ended there was an outburst of sustained applause with which the aged lecturer was visibly touched and pleased. It was left to the first Messel Lecturer, Professor Armstrong, himself obviously caught by the theme and by its handling, to pay a reverent and fitting tribute to his successor. The first Messel Lecture of two years ago we ventured to describe as a brilliant piece of self-expression. Although so different in its form and matter, Lord Leverhulme's address might bear a similar description. Together they set a very challenging standard for their successors.

A Great President

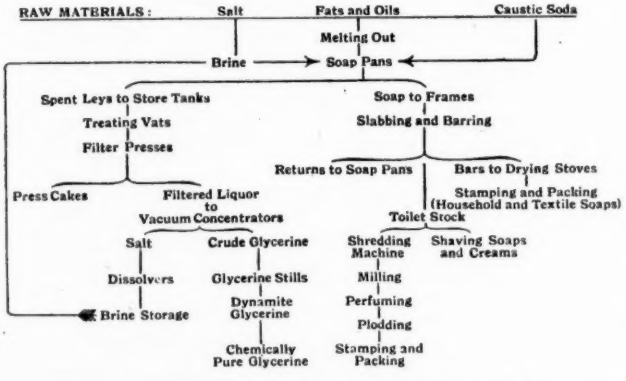
This note on Lord Leverhulme may fittingly be supplemented by one on the great chemist who presided at the Lecture and who this year retires from the presidency of the Society. Dr. E. F. Armstrong emerges from his two years of office as a great president, with a rare mental aptitude for both scientific and commercial pursuits, and a mind of uncommon stature, range, and quality. A big figure already, one may easily see him becoming before long one of the recognised great scientists of his generation. His work in committee and council is not for public discussion, but he cannot have spent two years in the chair without bringing his commercial experience to bear with a quickening effect on the Society's business. Little

opportunities for personal show are not much in his line, but whenever there has been a real job to do he has done it supremely well. His presidential address on "The Fats," and his editing of and introduction to *Chemistry in the Twentieth Century* stand out as masterpieces, but some of the smaller things that might easily be passed have also been done with power and vision. That crisp little characterisation of Lord Leverhulme, with its striking economy of words, was a fine bit of work; so, too, was his tribute to the new honorary members—Professor Fourneau and M. Armand Solvay. There was a character in these simple performances which may later appear on a larger scale. Dr. Armstrong, like all presidents, probably feels that more might have been accomplished—in particular with his Chemistry House scheme. But men who move with a long stride are apt to forget the pattering feet about them, just as the mind which can only see essentials may be fretted a little by those whose eyes are glued on non-essentials. His presidency concludes appropriately with one of the best meetings the Society has ever held.

The Crosfield Organisation

It was appropriate, too, that Lord Leverhulme's fine plea for making industry as human as possible should be immediately followed by a visit to the great Crosfield works at Warrington, where one saw hand craftsmanship happily and profitably retained for the more delicate operations of a vast modern industry. This is no mere survival of an earlier organisation; it is a deliberate policy. We heard it described as "anti-American," and justified on the ground that the trained human artisan still beats the machine in many points. Certainly the speed with which some of the girls worked was astonishing. Here at Bank Quay the pervading spirit was that of a real fellowship of work. Both the firm and the workers have a common pride in the place, and it was not surprising to hear that there is at present a list of some hundreds of girls waiting to be taken on. Works where girls are still encouraged to sing at their work have become too rare.

It was the first occasion, we believe, on which a public party has been permitted to see so much of the internal organisation, and the tour gave a good general impression of the whole process of soap-making from the raw material to the finished article. The cement plant attracted considerable interest. It was much too large a programme to be described in detail, but the following diagram gives the processes in outline for the manufacture of soap and glycerine:—



The visitors numbered nearly 500, and the way they were handled was itself a model of organisation. The programme was as foolproof as it was possible to make it. Whenever any members attempted to stray from the narrow way there were boy scouts or girl guides who divined their intention and rescued the truants in advance. So the large party passed on to luncheon, and later through the works, with guides in charge of small sections, as easily as half a dozen might have done. In the Centenary Institute, where luncheon was served, Mr. Holman Kingdon, on behalf of the directors, welcomed the guests, and short addresses were given by Lord Leverhulme, Sir William Pope, and Dr. Armstrong. At the close of the tour of the works there were demonstrations in fire drill and life saving which were watched with great interest.

At the United Alkali Works

The United Alkali Co. joined heartily in the welcome to the members, entertaining them to luncheon at the Adelphi Hotel, and afterwards showing them over the great works at Widnes. The guests at luncheon were received by Sir Max and Lady Muspratt, and the speaking was confined to a vivacious address from the chair by Sir Max. As he explained, the company would have been delighted to give a much longer period to the visit to the Widnes works, but it had to be somewhat curtailed, on account of the day's programme being so full. The arrangements, however, were so well made that within a couple of hours the visitors got a good general impression of the great works (some account of which has been given on different occasions already). It was a very hot afternoon, and each visitor carried away a delightful sample of bath salts for appropriate refreshment of mind and body before the annual dinner in the evening.

There was one feature of exceptional interest in connection with the visit—the decision of the directors to grant a passing inspection of the new plant for the oxidation of ammonia to nitric acid by passing it over platinum gauze. The plant, we understand, is working most successfully, and is producing nitric acid from by-product ammonia on a commercial scale. It is so designed that it can be rapidly duplicated in case of need, and is a further step towards ensuring the independence of this country of imported supplies of nitrate in case of emergency. Of this enormously important and public spirited development we are not in a position to publish exhaustive details at present, but its accomplishment is a fact of great chemical and national interest, and the policy of the company in giving the visitors a general view of the plant is itself notable in an industry where secret processes play so great a part. Shortly we hope to be able to publish some further details. Sir Max Muspratt accompanied the party to Widnes, and he, together with Dr. Clayton, M.P., and other members of the company, and heads of departments, spent a busy afternoon in attending to the comfort of their guests.

An Evening at Port Sunlight

Port Sunlight is now an old story, but the model village, under the evening sunshine, with its picturesque buildings and well-kept lawns, presented an impressive picture of industrial community life. One could not resist some reflections on the fact that it had all been created within one life-time, and that Lord Leverhulme has been spared to see the happy realisation of what a generation ago was merely a dream of his own wonderful brain. The guests were received at the Hulme Hall by Mr. Hulme Lever, who explained that his father was attending a meeting in connection with the exchange of preachers between Great Britain and America! At the dinner which followed the speaking was of the breeziest character. Mr. Hulme Lever, whose resemblance to his father is noticeable, and who speaks in a clear voice, reminded us that only on three occasions had the Society elected its president from the soap industry—Mr. Rymer Cook in 1890, Mr. John Gray in 1920, and Dr. Armstrong in 1923. The President and Mr. H. R. Greenhalgh briefly addressed the company.

After dinner the guests left for the Lady Lever Art Gallery, where a delightful evening was spent among the pictures. The "highbrows" talked high art, the more

SNAPSHOTS AT THE LIVERPOOL MEETING:

During the Visits to the Crosfield and United Alkali Works

frivolous fox-trotted up and down the hall, and below, in a delightful old-style buffet, the more depraved contentedly smoked and drank, or indulged in rhapsody about the unique collection of masonic banners on the walls. Very reluctantly, indeed, were the party ejected from this haven of rest to catch the train and boat back.

The Technical Papers

Although the discussions never went to any wearisome length, the technical contributions will not readily be forgotten. The President's address on "The Fats," was a massive piece of work. How full of matter it was would be realised only by those who attempted to summarise it. Dr. Armstrong's addresses somewhat resemble Mr. Asquith's speeches—they cannot be squashed into a paragraph; scarcely indeed can a sentence be omitted without loss to the total effect. Lord Leverhulme's Messel Lecture has already been alluded to. It was a remarkable utterance to come from a man so immersed in business and to be chosen for delivery to an assembly of scientists.

A party at the Crosfield Works

The three technical papers at the Friday morning session were all good. Mr. Carr's story of "Insulin and its Manufacture" told without too much technique the physiological effects on the patient, the present sources of supply, and the process of manufacture. The illustrations of the plant installed by his firm were followed with great interest, and the little outbursts of applause showed appreciation of the chemical engineering points. It was noted that while Kestner, Sharples and other British firms were well represented on this side, the Passburg vacuum dryer had been adopted, and this attracted some notice among the chemical engineering experts. Dr. Armstrong, in commenting on the paper, pointed out how little was really known yet of the chemistry of insulin, and predicted that the pancreas would not long continue to be the sole source of supply; yeast would probably supply the need.

The paper by Prince Conti on "The Larderello Natural Steam Power Plant," proved extremely interesting as an example of the use of natural steam from springs in volcanic areas as a means of generating power. It was rather surprising to hear that the system is already so successful, and stimulating to hear of its vast possibilities. Mr. Norman Kemp in his paper on "The X-Ray Analysis of Coal," indicated the wide applications of radiology in industry, and incidentally gave an admirable example of clear and condensed exposition.

The Social Side

On the purely social side the 1924 meeting was a real triumph. The informal opening reception by the President made it clear that the members were in the right mood. The Lord Mayor's reception at the Town Hall more than confirmed the impression, and from that point on success was assured. Unwisely, with the memory of chemical after-dinner oratory heavy upon us, we cut the annual dinner, only to hear afterwards that it was a truly joyous affair. Duty, also, prevented us from revisiting the land of our fathers on the Saturday, but those who journeyed to the source of Liverpool's water supply would certainly not regret it.

For the success of the meetings, whether from the technical, business or social side, too much praise cannot be given to the Liverpool committee. Mr. Edwin Thompson as Chairman and Mr. Gabriel Jones as secretary were at everybody's disposal, and the thoroughness with which every want had been anticipated and provided for, accounted for the smoothness with which all the arrangements went through.

Some Personal Figures

There were many distinguished visitors during the week. Chief among these, we think it will be admitted, was the Lord Mayor (Mr. Arnold Rushton). He came officially to the opening session, and he liked the people he met so well that he came again and again, and if he did not enjoy himself his looks belied him. Sir Max Muspratt was naturally a prominent figure, and Lady Muspratt also attended some of the functions. Thoroughly recovered after his recent holiday in Spain, he is now looking forward to his visit to Canada. Most of the notabilities of British chemical industry appeared at some point or another. The social functions were brightened by the attendance of so many ladies that dullness was impossible, and their presence henceforth must be considered indispensable. The foreign delegates included a number of distinguished chemists who appeared to be greatly interested in all they saw.

Institute Students' Visit to Wembley

On Tuesday a visit was made to Wembley by 350 members of the Institute of Chemistry Students' Association. After a preliminary meeting at University College, when Mr. W. J. U. Woolcock explained the exhibits and their principal features of interest, the party proceeded by special train to Wembley. The morning was devoted to an inspection of the Chemical Section, then luncheon was served in the Stadium Restaurant and after that other parts of the exhibition were visited freely. In the Chemical Section the party was split up into small groups which were conducted round the exhibits by a number of guides who had been taken a personally conducted tour by Mr. Woolcock on a previous occasion. The most remarkable feature of the organisation was that though there was such a large addition to the number of visitors in the Section there was at no time anything approaching a crowd. This, we understand, was due to the excellently organised plan, arranged by Mr. G. S. W. Marlow, of the Institute of Chemistry, under which the time-table of each group was completely mapped out for a visit to each exhibit, so that two groups were never at the same exhibit at the same time.

Among those present at the students' visit was Professor W. P. Wynne, president of the Chemical Society, who expressed his opinion of the Chemical Hall as the most wonderful thing that had ever been done for chemistry. He was particularly struck with the pure chemistry exhibit in the Scientific Section, which clearly showed the basis on which the industry displayed in the surrounding exhibits was built.

On Wednesday afternoon, following the annual meeting of the Institution of Chemical Engineers, a party of members paid a visit to Wembley and were conducted round the Chemical Section by Mr. Woolcock.

The Messel Lecture by Lord Leverhulme

On Thursday morning, July 10, Dr. E. F. Armstrong, the president, in introducing Viscount Leverhulme as the Messel Memorial Lecturer, and the recipient of the Messel Medal for 1924, said that Dr. Messel was an example of that rare combination of a chemist, a chemical engineer and a man of business who had brought the manufacture of sulphuric acid to a technical and commercial success. In selecting Lord Leverhulme to receive the Medal the Council wished to pay tribute to him as the founder of one of our greatest chemical firms, as the leader of one of the most important industries based on chemical science, and, above all, as a leader of men and an Empire builder in the very widest sense of the term. (Applause.) They knew Lord Leverhulme to be a man of inexhaustible energy, vibrating with ideas and possessed of the highest ideals; he might be described, if one might coin the phrase, as the greatest door opener in British Industry. Lord Leverhulme had built up a technical industry, and built it first by dint of his own personal effort and his own hard work, and, secondly, by his encouragement and application of every form of science, their own science of chemistry above all. Lord Leverhulme would permit him to recall one name, that of a chemist who stood close beside him as his right hand man for many years, a former President of the Society, Mr. John Gray. (Applause.) They have often heard Mr. Gray relate how quick was Lord Leverhulme's insight into the technical problems which daily confronted them in early days at Port Sunlight, and how unerring was his judgment in choosing the right course. Those of them who worked with him to-day knew that time had made no change in this power of going to the heart of things, and that no expenditure of time or money on technical progress or investigation was stinted when a good case for it has been established. (Applause.)

Science and Religion

After the presentation of the medal by Dr. Armstrong and a few remarks by Lord Leverhulme, he proceeded to deliver the Messel Lecture, to which the title "Science, Religion and Workshop" was given. He said that it was disconcerting to our insular pride and love of first place priority in all developments to learn that it was not until six centuries ago that soap was first introduced into the daily life of the people of the British Isles. However, to-day it was estimated that the consumption of soap in Great Britain per head was as high or higher than that of any other country, while British soap was higher in quality and lower in price than that produced by any other nation.

There was sound logic in the saying that cleanliness really and truly was next to godliness, and this truism impelled the consideration whether science or religion had accomplished most to the progress and civilisation of mankind. Religion was not in conflict with science, but for some eighteen centuries the Bible had been forced by professors of religion upon mankind not only as a guide, but as something to be accepted as scientific truth, that could not be challenged without bringing down religion in devastating ruin. In spite of persecution arising out of mistaken interpretation of the teachings of the Bible, science had been the vitalising power in raising the condition of mankind to its present altitude, and it was to science we must look for still greater advances and a still higher level of comforts and elegancies of life. Science and men of science, once freed from the thraldom of the Church's wrong interpretation and the mal-administration of the Bible had made more progress in raising the level of happiness in the last two centuries than was achieved in all the preceding centuries of the world's history. Religion and science must learn to go arm in arm through life, to elevate mankind higher and higher above the brute beast and nearer to the angels, and both must progress by the reasoned solution of new problems arising at each step forward.

There could be no divergence from the basic laws governing man's research and discoveries as between religion and science. The analytical chemist had banished belief in magic by his investigations into the immutable laws of the physical universe; life may have lost somewhat of its charm of poetry, tradition, fairy story and song and become more matter of fact. But by his probing into the secrets of nature the scientist had rendered life more livable by giving greater control over the forces of nature, and had thus provided some compensation for the loss of poetry.

Science and Industrialism

If professors of religion had not kept pace with the advances of science in the ethical and moral sphere, still less had the professors of industrialism in modern manufacturing activities, who must confess with shame that improved methods of production had not resulted in equally improved conditions of life for the workers in factories. He could see, however, in the first twenty years of this century greater progress towards a higher realisation of the importance of better relations with humanity in industry than was made in the preceding 200 years. The manufacturer who neglected the care of his mechanical implements would be scorned as an example of waste and inefficiency, but he might neglect the welfare and the happiness of those employed in his factories and yet win high regard and respect as a keen, hardheaded business man. What was wanted was something—known to chemists as a catalyst—to join together so-called Capital and Labour unitedly for welfare, progress and prosperity.

Religion as a Catalyst

Surely this catalyst could be best provided by religion. What the business world required to-day was a Newton or a Faraday of religion to investigate the pressing human problem of the modern workshop. It was a well-established scientific fact that there could be no intake without corresponding outflow. The very spirit of the modern business mind, hard as granite and keen as a blade of steel, seemed to be founded on the very opposite thesis, to take all in that could be got and give out as little as may be. By the hard-headed business man it was thought "good business" to get the greatest amount of work in the longest hours for the minimum pay. Equally to give the smallest amount of work in the shortest hours for the maximum pay obtainable by force or threat of strikes was thought to be "good business" by organised Labour Unions. Both were contrary to scientific truths.

To entail on the worker conditions of labour that destroyed happiness and produced discontent made the efficient performance of the daily task impossible. Modern workshop conditions of production were essential to the clothing, housing, transportation and feeding of human beings under modern civilisation, but workshop life soon became brain fag and weariness. Discontent was even more keenly felt to-day than a century ago despite the higher wages and shorter hours, which were no substitute for lack of mental stimulus towards happiness and contentment. A century ago the village blacksmith sang and whistled at his work, though underpaid and underfed. The modern mechanic did not feel inclined for either. No thought was given in workshop efficiency to the mental weariness of the human worker. Progress in efficient production could only make further advances by the cultivation and maintenance of happiness in workshop employees, and what was wanted was that there should be corresponding researches undertaken and knowledge and discoveries attained in the ethical life of mankind as in the physical life. The so-called modern socialistic or communistic upheaval was as old as community life itself. All the modern suggested short cuts to welfare and happiness had been tried over and over again, and always ended in increasing and never in decreasing human misery and wretchedness. Yet in the ages past the basic truths of the Bible when applied to community life had invariably resulted in making possible the attainment of the greatest prosperity and the widest diffusion of happiness. Through the centuries Christians had made the mistake of neglecting these basic truths. Had science in the same way neglected basic scientific laws there would have been the same confusion and chaos to-day in the world of science as there was in the world of religion.

It required to be realised to-day more than ever that Christ was the greatest ethical scientist the world had ever produced, and that His teachings were scientific ethical truths that governed the conduct of life.

Technical Contributions at the Liverpool Meeting

We give below reports of the three technical papers presented at the Annual Meeting of the Society of Chemical Industry at Liverpool on Friday, July 11, together with the discussion on each.

Manufacture of Insulin.

MR. F. H. CARR, C.B.E., F.I.C., read a paper on Friday, July 11, on "Insulin and its Manufacture." The introduction of insulin for the treatment of diabetes, he said, was one of the greatest contributions—perhaps even the greatest contribution—ever made to the medical treatment of a specific disease. Little was known about the chemical properties of insulin beyond the fact that it possessed in a very high degree the power of removing sugar from the blood. One-tenth of a milligram of the purest insulin so far prepared would cause the disappearance of about three grammes of sugar in two hours, while thirty-three grammes (a little more than one ounce) would account for one ton of sugar. It was not possible to test insulin except by its effects in reducing the blood-sugar in animals, such as rabbits. It was clearly a very complex structure chemically, probably of a protein-like nature. In the normal person insulin was released into the blood from the "Islets of Langerhaus" in the pancreas, when the concentration of glucose rose above about 0·1 to 0·15 per cent. The islets contained a large store of insulin, but other enzyme secretions of the pancreas destroyed it rapidly after death, so the problem of preparing insulin from the pancreas depended on an early separation of the islets. There was now evidence that insulin was stored in many other parts of the body, but not in such large amount.

Mr. Carr then outlined the process in use at the British Drug Houses with the aid of lantern slides. In outline the method of preparation from ox or sheep pancreas consists of :—

(1) Procuring, dissecting and cooling the pancreas glands as rapidly as possible after the death of the animal; (2) grinding or mincing at a low temperature to break up the cells very thoroughly; (3) rendering the material acid to p_H 2·5 or alkaline to p_H 7·0, in order to set free the insulin from the tissue on which it is adsorbed; (4) extracting it with alcohol of such a strength that but little of the enzyme is dissolved, and as much as possible of the insulin. For this purpose alcohol of 65–70 per cent. strength had so far proved the best solvent; (5) clarifying this extract by cooling it to −5°, and filtering or centrifuging it; (6) concentrating at a low temperature to 1-10th of its volume, extracting the fat, and filtering; (7) precipitating the proteins with ammonium sulphate or with absolute alcohol at p_H 5; (8) precipitating the protein mixture successively with alcohol and picric acid, and finally by adjusting the aqueous solution to p_H 5·2. Proteins which were precipitated above and below p_H 5·2 did not merely dilute insulin, but were antagonistic to its action. This purification was consequently of great importance.

During the sixteen months the process had been in operation the yield had increased twenty-fold and the selling price had been reduced by successive stages from 25s. to 2s. 8d. per bottle of ten doses, thus bringing the treatment, at first prohibitive to many, within the reach of all. At the same time the purity of the insulin, as issued for use, had been greatly improved.

Mr. Carr concluded with reference to some cases of diabetes where insulin had produced wonderful cures.

Dr. Armstrong's Comment

The President said that Mr. Carr's paper really showed what a marvellous achievement the British Drug Houses had accomplished in making insulin, and the Society was to be congratulated in getting such an account laid before it. He was sure Mr. Carr would agree with him that it was a little deplorable they did not know what insulin was, nor what happened to the sugar, and that they did not really know anything. He disbelieved most of the suggested theory about insulin. He did not think it was a hormone. He was quite certain it was an enzyme. It was the old story—they had an active centre in a big colloid molecule, frightfully delicate, very easily destroyed. That was why Mr. Carr had to be so careful in getting it out, and he prophesied that if Mr. Carr continued trying he would some day get insulin out of yeast, and not have to go to pancreas at all.

Professor H. E. Armstrong said he would like to call the attention of the meeting in the first place to the astounding revelation it provided of the conditions which must prevail in the chemical industry in the near future. They had two leading manufacturers on the stage before them. Those who knew the kind of work in real chemistry that Mr. Carr did in his early days, before he attempted anything of this kind, would realise the kind of preparation he had had. And that kind of preparation was essential if they were to do any good in the future in this class of work. He wished to point out the lesson to those responsible for the University of Liverpool, that it was their duty to make chemists, whole chemists, not bits of chemists, as they were doing at present. (Laughter.) They were cutting chemistry up into pieces, and the pieces were never put together. The puzzle was never made complete, and it was time that somebody should speak up on this matter—the damnable way in which they were specializing in this country. Mr. Carr had got hydrogen-ion worship, (Laughter.) Why did he not speak in plain terms of acidity. which ordinary people could understand? Most of the people there had not understood him—(laughter)—because he was using language which was not common sense, in the jargon of the day, which obscured everything, hid the issues or complicated the issues.

The meeting accorded its thanks to Mr. Carr for his paper.

Mr. Carr, in acknowledgment, said that it was almost certain, it seemed, that somehow the proteins of the body, fractionated and treated by the process which they were adopting, did form a substance which caused the disappearance of blood sugar, and that substance was something which was probably produced in every gland of the body. One of these days they would not necessarily have to go to the pancreas. They might be able to go to any part of the body and know exactly how to change the proteins to produce a thing of this type. (Applause.)

Use of Volcanic Steam

The use of natural steam from springs in volcanic areas as a means of generating mechanical and electrical power was the subject of a paper by Prince Piero Ginori Conti on "The Larderello Natural Steam Power Plant." The feasibility of utilising natural steam for this purpose, he said, was ignored till the beginning of 1904, when, as general manager of the Larderello works, he first attempted the use of natural steam with a small engine of a few horse-power. The results were quite satisfactory, and a further experiment was carried out in 1905 with a larger engine of about 20 h.p., driving a dynamo for the illumination of the works. This engine had worked, practically without interruption, for over ten years without the slightest inconvenience.

The steam and hot springs contained boric acid which was extracted, but one of the chief features of the natural steam was the presence of various gases, carbon dioxide, sulphuretted hydrogen and helium. Owing to the low pressure of 2 atm. absolute of the natural steam it was impossible to use a turbine direct, and owing to the presence of the gases the condenser efficiency would be too low for even a low-pressure type to be employed. Special evaporators were constructed to produce "secondary" steam with the heat of the natural product. Aluminium was found to be the best metal, though it was hardly sufficiently resistant to the corrosive effects of the gases. However, the Larderello company erected a plant of 7,500 kW capacity in 1914, which has been operating adequately.

By drilling wells to a greater depth at Larderello and in other places, much larger supplies of natural steam had been obtained at higher pressures, and turbines fed with the natural steam and exhausting into the atmosphere were now being tried experimentally with great success.

Sources of natural steam were quite abundant in various parts of the world where volcanic activity had been at work. A very wide field of research was afforded in America. In Alaska, the "Valley of Ten Thousand Smokes" had been very completely explored by the geologists of the United

States Government. The phenomena were not very different from those of Tuscany, but the volcanic region was far greater. In California experiments were being made, and very fair amounts of steam had been obtained. In South America (Chile and Bolivia), near the now extinct volcano Tatio, steam springs of remarkable importance had been found. Japan was another land where natural steam springs abound. Several inquiries had been made by Japanese engineers and scientists as to the methods followed at Larderello, and considerable interest had been shown regarding his (the speaker's) work. New Zealand was also rich in natural steam in the Rotorua region.

Quite a Pleasant Hobby

In opening the discussion on this paper, the President said we in England often talked of harnessing the tides, but Prince Conti was more modest, and preferred to attempt to harness the volcanoes. It seemed quite a pleasant hobby. (Laughter.) They realised the immense importance of the work for chemical engineering which Prince Conti had put into these problems before they were solved. He had perhaps not quite emphasised enough how great a difficulty there had been owing to the presence of sulphuric acids in the steam. Prince Cont had unfolded what was quite a new chapter in turning to men's needs—the resources of Nature. It was very wonderful to think they could take the steam coming out of the volcanoes and turn it to the very important use of producing electrical power.

Sir William Hope said he had seen most of the works and could add his testimony to the extreme ingenuity of the whole thing, and the very careful and interesting way in which it was worked out. In consequence of the presence of sulphur, copper could not be used for electric leads, and the whole of the electric leads were of aluminium. That, he took it, was one of the principal reasons why the recent development of aluminium has proceeded on such a large scale.

X-Ray Analysis of Coal

Mr. C. Norman Kemp then read his paper on the X-Ray Analysis of Coal, and a New X-Ray Examining Unit. The method was an adaptation of the X-Ray stereoscope technique, the samples examined being first submitted to some preliminary treatment to "bring out" the constituents, such, for example, as treatment with pyridine to dissolve out soluble portions of the coal. In this way the mineral portions of the specimen are clearly shown.

During the course of the work it became apparent that there might be a real place in industry for an X-ray unit of novel design, and free from the necessary complications associated with the equipment employed by the medical radiologist. The unit described consisted of a steel tank provided with a lid of insulating material, and containing a high-tension transformer (65,000 volts), with a Coolidge tube of the radiator type clamped above it so that the cone of rays from the target of the tube was projected vertically upwards through a suitable glass or aluminium "window" situated about the centre of the lid. The tank was filled with special oil so that both transformer and tube were completely immersed. Two terminals were fitted to which the leads from an alternating source of supply of suitable voltage and periodicity were attached. In cases where only direct current was available, a small rotary converter was provided. The controls were of the simplest description, one being concerned with the variation within pre-determined limits of the Coolidge tube filament current, and the other functioning as a starting switch. The latter automatically cut off the current when the hand was removed. It would be obvious that all the real "danger" was packed away in the tank, there being no external high-tension terminal, the X-rays emerging only by the window in the lid. The unit was manufactured by Messrs. Watson and Sons (Electro-Medical), Ltd., London, to whom the author desired to record his warm thanks for courteous co-operation n connection with the present demonstration.

An Important Industrial Method

Commenting on this paper, Dr. R. Lessing said he had had the great privilege of being in contact with Mr. Kemp's work on the examination of coal, practically from the time when he took up that particular phase of his most interesting and most valuable work. He knew nothing about X-ray analysis, but when he became acquainted with his methods he realised the enormous importance they would have on a very important branch of the industry. Mr. Kemp had brought forward this method which had enabled them to be told what the impurities were, and to see them with the naked eye in his photographs or stereoscope. It was a most wonderful sight to look at pieces of coal and actually see the impurities without having to reduce the coal to a powder, as had been the case hitherto. This gave some opportunity of obtaining a knowledge of the impurities from a sample of coal which they could not possibly obtain if it were powdered, and in this direction alone the work would be of immense value. (Applause.)

Votes of Thanks

The President then briefly thanked the University authorities for allowing the use of the theatre for the meetings. (Applause.)

Mr. W. J. U. Woolcock, the new President, proposed a vote of thanks to the retiring President for his services during the past two years. He wished to emphasise what he believed they all would say, that perhaps the biggest work which Dr. Armstrong had achieved was the production of *Chemistry in the XXth Century*, a book which, as time went on, they would constantly refer to as a monumental work showing what the state of their knowledge on chemical matters was during the year of the great Exhibition. The production of that work had involved a very great sacrifice of time, and it would stand out as one of the greatest contributions to the Society which had ever emanated from any one of its members. (Applause.)

The motion was cordially adopted.

The president briefly replied, and proposed a vote of thanks to the Liverpool Section for their hospitality, and the way in which they had carried out the arrangements for the meeting.

Mr. Edwin Thompson responded on behalf of the Liverpool Section, and said whatever success had attended the meeting through their efforts had been largely due to the very great assistance they had received from many friends in the way of hospitality, and through the excellent work and co-operation of Mr. Gabriel Jones and the authorities of the Liverpool University.

Tar Works Fatality Awards

At the Oldbury Police Court on July 15, Mr. G. S. Albright, of Albright and Wilson, chemical manufacturers (chairman of the Bench), announced that in connection with the recent fatal accident at the Midland Tar Works, in which great bravery was displayed by two Oldbury men, one of whom lost his life, several awards had been made by the Royal Humane Society and the Carnegie Hero Trust Fund. The recipients were the widow of Mr. George Challis, of 5, Lockside, Tat Bank, Oldbury, and Mr. Arthur E. Hebberts, of 57, Dog Kennel Lane. On April 14, in the course of cleaning out a still at the works, a man was overpowered by fumes and rendered unconscious. Hebberts ran to the still and climbed down a ladder in the hope of rescuing his colleague, but he, too, was rendered unsconscious. George Challis followed Hebberts into the still, and was also rendered unconscious. Neither Hebberts nor Challis stopped to avail themselves of the safety apparatus that was provided at the works.

The Royal Humane Society had awarded to the widow of Mr. Challis an In Memoriam Certificate, and the Carnegie Hero Fund had awarded a framed certificate, a cheque for £20, a pension of 30s. a week to the widow and 5s. a week for each of her five children. To Mr. Hebberts the Royal Humane Society had awarded its bronze medal, and the Carnegie Hero Trust Fund its certificate and a cheque for £25.

The Term "Saltrates"

Mr. Justice Romer on Wednesday in the Chancery Division granted an injunction to Saltrates, Ltd., restraining infringement of their trade-mark "Saltrates" by a man named Law, who was described as a man who sold from door to door. Mr. Coultney Terrell (for plaintiff) said their "Saltrates" was well known. The defendant sold 2d. packets of what he called "Magic Bath Saltrates."

The defendant did not appear.

The British Empire Exhibition

Chemical Notes and News from Wembley

A NEW edition of the Official Guide to the Exhibition has just been issued, which is a considerable improvement on the one originally published. The early guide was, of course, prepared before the Exhibition was opened, and the descriptions could obviously not be so good as those in the present edition, while the opportunity has been taken to replace the

[*Photo.: Campbell-Gray*

MODEL LANDSCAPE IN THE NOBEL EXHIBIT

imaginative sketches by photo-blocks. We notice that among a short list of things "not to be missed," the soap-bubble fountain, which is part of the Erasmic exhibit in the Chemical Section, is included, while another item of interest is the household tap suspended in mid-air on the Ofome stand, which is pouring out a constant stream of water. It is satisfactory to note that the Chemical Section receives the notice in the guide that it deserves.

The Nobel Exhibit

The exhibit of Nobel Industries, Ltd., has already been referred to (THE CHEMICAL AGE, April 26, p. 436), but as it practically comprises a section in itself in the Palace of Industry, it is worth close examination. Besides explosives and their accessories there are a number of other interesting items to be seen, the "Necol" production, household cement, plastic wood and so on; then there are gas mantles, petrol lamps, the Kynoch Lightning Fastener, Pegamoid leathercloth, a display of acids and chemicals, and many other items. The range of chemical substances manufactured by Nobel's is a large one, since in Great Britain and South Africa nitric acid, hydrochloric acid, pure sulphuric acid, oleum, nitrate of lead and salt cake are made and displayed in the exhibit. In the United Kingdom ether and bleaching powder are also made, while in South Africa magnesium chloride, alumina ferric, Epsom salts, washing soda and refined sulphur are prepared. To illustrate the use of the various products of the firms associated with Nobel's in everyday life, a model showing a mountain, city, docks, mines, railways, etc., forms the centre of the exhibit and is illustrated on this page. There are labels attached showing how explosives are used in mining, petrol lamps in the remote houses and so on, the whole making an exhibit of great educational value. An interesting little pocket booklet has been issued describing the whole exhibit.

British Dyestuffs Plant

Our other illustration shows the model dyestuff plant on the stand of the British Dyestuffs Corporation, where the processes involved in the manufacture of four typical synthetic dyes can be followed, wooden dummies in the model stand for vats, filters, autoclaves, and so on, while below are flow sheets showing how the materials pass through the plant and are converted to form the finished dyestuffs.

Monel Metal

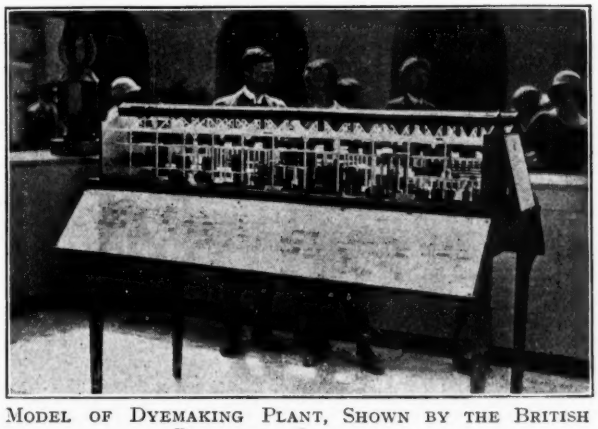
The exhibits of Monel metal and nickel steel are scattered about the Exhibition in a rather puzzling fashion. Thus, there is one exhibit in the Chemical Section by the Mond Nickel Co., where samples of the metal, ore, and salts are shown. In the Palace of Engineering, on stand 47, avenue 6, bay 16–17, J. & J. Weir, Ltd., have an exhibit showing the uses of Monel metal and particularly its resistance to corrosion. These two exhibits have already been described, but on stand 242 in the south-west block, bay 2, the Mond Nickel Co. have another stand in connection with Henry Wiggin and Co., of Birmingham. Here, besides a number of examples of the use of nickel alloys for ordinary purposes, such as cooking utensils, motor-car radiators, etc., there are a number of specimens of the metal and its salts. One prominent exhibit is Mond nickel pellets, guaranteed to be 99·9 per cent. nickel and free from cobalt, thanks to the unique carbonyl process by which the metal is produced. There are also samples of cobalt metal and its ores, while samples of the refined oxide in various characteristic blue and pink colours are very striking. It is remarkable that silver and gold are by-products of the Canadian ore, and samples of these precious metals worked up by the company are on view. Two barrels contain Maple Brand nickel sulphate and copper sulphate respectively, while a portion of the exhibit shows the uses of copper sulphate as an insecticidal spray in agriculture, artificial grapes being used in the scheme of decoration of this section.

Rotary Pumps

While visiting the above stand that of the Kitson Engineering Co. (London), Ltd., of Stamford, Lincs, which is opposite, should not be missed. Here are to be seen examples of the Kitson-Utley rotary pump in various sizes operated by hand and power. This simple little device is worth investigation and can operate with a variety of liquids. Other features of interest at the same stand are compressors and refrigerating plant.

Water Purifiers

In the British Government Building in the Tropical Hygiene Section there will be found models of plant for the purification of water supplied by the Paterson Engineering Co., Ltd., of Windsor House, Kingsway, London. This plant is fully described in an artistic illustrated booklet just issued by the firm, and consists of a model of one of the units of a rapid gravity filter, air-cleansed gravity and pressure filters suitable for drinking water for industrial purposes, the chloronome for disinfection of water by chlorine, and electrolyser for the production of sodium hypochlorite for disinfection purposes,



MODEL OF DYEMAKING PLANT, SHOWN BY THE BRITISH DYESTUFFS CORPORATION

and a model of a by-pass osilameter gear for large water-softening plants. Plant of these types is, of course, of interest to all who are concerned with the use of water for industrial purposes, but the exhibit is appropriately housed in the Tropical Hygiene Section, since it is in tropical climates that such precautions become absolutely essential on the grounds of health alone.

The Housing Blunder—(XI)

A Vital Question Enveloped in Political Fog—The Attempt to Reverse the Order of Supply and Demand—Three Suggestions for Business Men

By Sir Ernest Benn

In the first of this series of articles ten fallacious propositions, each one a menace to national progress, were mentioned, and I now come to deal with the last of these, namely, that of the housing folly. To those who have followed the arguments in the nine preceding articles it must be obvious that it is utterly absurd to assume that one can schedule his requirements, advertise them openly to the world, and then hope to buy at reasonable prices, or indeed to buy at all. Yet this idea is observable in all the recent housing schemes, and it is at the very basis of Socialism in its application to industry.

All the schemes for the nationalisation of various forms of enterprise are founded on the theory that by ascertaining beforehand what is the demand, better arrangements can be made than those which exist at present to supply it. We are accustomed to speak of "supply and demand," and there is great wisdom in the habit which forbids us to call it "demand and supply." Business men without exception will agree from their own experience that supply must precede demand. There may be a prospective demand—a demand which the supplier believes will be forthcoming when the supply is ready—but in normal, ordinary, economic business supply must precede demand.

The truth of this is very clearly demonstrated in the auction room which, as I have said before, is a working model of the whole commercial system. The auctioneer produces the supply and says, "Here is a house; what will you bid for it?" One has only to put this question the other way round to see the absurdity of the position into which we have allowed ourselves to drift. Imagine, for instance, an auctioneer saying, "If I presently produce a house, what will you bid for it?" and then asking for bids without offering any guarantee that the house will be produced. Having secured his bids the auctioneer would go back to the builder, who would then become the supreme master of the situation and who would say that he would think it over, with the result that a few days later he would return with a demand for a higher price. That is almost exactly what is happening in the housing market to-day. The politicians are endeavouring to reverse the natural position to make "supply and demand" read "demand and supply," and to place the producer in a superior position to the consumer—a damaging and unnatural operation which, as I have previously emphasised, never has worked and never will.

Woeful Mismanagement by the Politicians

No question of national importance has been so constantly and so prominently in the public eye during the past five or six years as this problem of housing. No question has been so woefully mismanaged and so hopelessly tangled, thanks to the intervention of the politicians in a matter which is essentially one for the business man and for private enterprise. All parties have been equally guilty of spreading the notion that houses can be built by votes, that the tens of thousands of people who want houses badly had only to vote for this party or the other and houses would spring up like mushrooms so that the wants of the masses would be satisfied. The futility of the housing promises and the disastrous effects of the dabbling of the politicians have been too painfully evident—and are to-day—to need stressing.

In order to understand this housing blunder thoroughly, one has only to apply the modern ideas on housing as freely promulgated at the present time to one's own business. If one substitutes for houses some other article, say books, one sees more clearly the folly of it all. I select books because, as a publisher, I know something about them. My present position is that I have to go out into the market, take off my hat to my customer, inquire after his health and express the hope that he will honour me with his esteemed commands. I have to submit to his criticism of the books which I produce and have to make my terms agreeable in every way to him. Chastened by this experience of the road, I go back to my office, where I find a small army of persons associated with the production of books—paper makers, writers, printers, binders, block makers and the rest—and, having my customer's views fresh in my mind, am able to impress these persons with the need of economy and efficiency. In this way satisfactory books are produced and business is maintained and the book market is supplied.

Now imagine that the politicians were to raise the cry—the very sensible cry from my point of view as a publisher—that everybody must have books, that it is our right as citizens to enjoy good literature, that every Englishman should have his share of books and so on; and supposing we all voted for books. Instantly my frame of mind, and the frame of mind of everyone connected with the production of books, would undergo a change. Instead of having to go into the market with my hat off, seeking orders and making my price satisfactory to the buyer, I should find buyers ranged up in a queue outside my office, each one furnished with the appropriate official chit entitling him to books, and the result of a Government-backed demand of this kind on the matter of supply and on the matter of price can readily be imagined.

If in regard to housing there had been, in the post-war period, the same free play for private enterprise as there has been allowed to the book market, we should not to-day be suffering so acutely from housing embarrassments, and the numerous evils that are a direct consequence of the lamentable lack of dwellings.

Suggestions for Business Men

This brings me to the end of my little series of articles, and I venture to conclude with three suggestions. I have endeavoured to discuss a number of questions on which I feel that the public as a whole needs to be better informed. I have endeavoured to put forward the business man's point of view, and this to me is the beginning and the end of the whole of our economic difficulties—that the business man's point of view is not given sufficient prominence and consideration in public discussion. The result is that the discussion of our industrial problems is left to the doctrinaires, the politicians, students from the Universities, and others who, however good may be their intentions, are for the most part entirely lacking in experience and knowledge of business practice. It is the duty of the business men of the country to come out into the open and discuss business questions—to undertake, in fact, the education of the people on the problems of commerce and industry which are so vital to national well-being.

There are two or three easy and definite ways in which this may be done. Business men in particular can see that their workers—the trade union officials, the shop stewards and others with whom they are associated in the ranks of labour—have the fullest opportunities to study the trade and technical papers. We are sometimes inclined to forget that we are dealing nowadays with educated working-classes, who, for lack of better material to read, are absorbing Socialist literature with an avidity which does credit to their desire for knowledge. That desire would lead them to appreciate the closer information concerning real problems of business and commerce that is disclosed in the trade papers.

My second suggestion is that it is the duty of every business man to make the acquaintance of trade unionists, and their branches that are within his reach, and offer to talk to them. The working classes are only too anxious to hear the views of those who understand.

Form a Study Circle

Thirdly, every establishment in the country where men and women are employed should possess as part of its welfare programme a Study Circle, where these business and economic questions could be freely and openly debated and discussed. Business men of experience should not only establish such circles but should make it their duty to attend them and give them the benefit of their knowledge.

It is no use grumbling at the stupidity of industrial legislation, or complaining of the various handicaps that are now put in the way of commercial development, if persons like myself—employers and the business classes generally—insist upon confining their attention to their own business and leaving the rest of the world to find out what they can about it from anybody willing to enlighten them. There is a grave responsibility on every business man to do his part in contributing of his knowledge to the public discussion of all these matters.

Institution of Chemical Engineers

A Successful Inaugural Year

THE Annual Meeting of the Institution of Chemical Engineers at the Hotel Cecil, London, on Wednesday showed that the first year of existence of this body can be clearly described as a successful one and under difficult circumstances. The balance sheet showed a surplus of £170, the membership now amounts to 221 in all, and a good start has been made by the Education Committee in drawing up the standard of training for chemical engineers. The work, however, of getting the new society under way was seriously hampered for a time by the sudden death of Mr. A. C. Flint, the assistant secretary, in January. The threads of the work were taken up by Mrs. Talbot, but now Mr. Cecil J. T. Mackie has been appointed as assistant secretary to Professor J. W. Hinchley

Election of Officers

The result of the ballot for the election of officers was announced as follows:—President, Sir Arthur Duckham; Vice-President, Mr. K. B. Quinan; Hon. Secretary, Professor J. W. Hinchley; Hon. Treasurer, Mr. F. H. Rogers; Members of Council, Mr. J. A. Reavell, Dr. W. B. Davidson, Professor J. C. Williams and Mr. Randall.

Sir Arthur Duckham also announced that the American Institution of Chemical Engineers had expressed a wish to visit them next year, and that it had been decided to invite them, when it was hoped that the Institution would provide an interesting programme.

Presidential Address

Sir Arthur Duckham's presidential address dealt in a most interesting manner with the problem of the multiplication of technical societies. He pointed out that as far as he could see a gas engineer, for example, had at least six bodies with a claim on his membership. The Institution itself was an unavoidable and necessary addition to the number of technical associations which was entirely justified by the high quality of the papers which had been presented, but he suggested that it was time some scheme of affiliation carrying reciprocity of membership should be seriously considered. He also referred to the question of the education of the chemical engineer who would become a most important person in the future. The work which was being undertaken by the Institution in this direction was explained by Sir Frederic Nathan, who had served on the Education Committee. A scheme for a four years' course had been drawn up and this was being submitted to various manufacturers personally for criticism or suggestions on the question as to whether it would tend to produce the type of man required. The need for men who were both chemists and engineers was referred to by several speakers in the discussion which followed, but Professor Arthur Smithells questioned whether it was really practicable to spend so long a time training a man for the general qualification of a chemical engineer and whether it was not better to produce a man who would become a chemical engineer after works experience.

Technical Papers

After luncheon two technical papers were presented. Mr. E. A. Alliott dealt with the subject of "Self-Balancing Centrifugals." It is understood that this was merely an introductory paper, dealing with the author's work. A number of practical demonstrations with table apparatus served to illustrate the idiosyncrasies of centrifugal machines, which were very largely capable of prediction by mathematics. The effects and causes of unbalanced loads, precession, whirling, etc., were covered, and it was pointed out that conclusions drawn from the ordinary text book theory of spinning tops were apt to be dangerously misleading.

Mr. G. W. Himms described in a paper on "The Effect of a Current of Air on the Rate of Evaporation of Water below the Boiling Point" some work he had carried out in conjunction with Professor Hinchley. For example, in an air duct, with a draught of four metres per second, 300 c.c. of water had been evaporated in 15 minutes at 79° C. About 250 experiments had been made and it was hoped, when the investigations were complete, to have data which would enable a chemical engineer to know whether it was worth while to save time in using an air current to assist evaporation under given conditions.

At the conclusion of the meeting tea was served and the members proceeded to Wembley, where Mr. Woolcock conducted them round the Chemical Hall.

Chemical Trade Returns for June

Import Improvements

CHEMICALS, drugs, dyes, and colours imported during June, according to the official returns, had a total value of £1,108,816, which represents an increase on last year's figures of £89,984, and a decrease of £362,870 on the figures for May of this year. Exports are down this month, the figures being £1,902,644, as compared with £2,383,860 for 1923, a decrease of £481,216. Compared with May of this year there is a decrease of £519,670.

The detailed figures of quantities which appear below indicate a notable increase in the imports of nitrate and other compounds of soda, while exports of caustic soda are markedly higher. Exports of sulphuric acid, sulphate of ammonia, naphthalene, tar, oil, etc., are distinctly lower than in the ocrresponding month last year

Imports for June

INCREASES.		1924.	1923.
Bleaching materials	cwts.	5,302	4,981
Borax	cwts.	8,796	2,610
Crude glycerin	cwts.	3,431	60
Potassium nitrate	cwts.	13,495	1,049
Other potassium compounds	cwts.	128,710	125,202
Sodium nitrate	cwts.	108,379	20,294
Other sodium compounds	cwts.	31,432	16,626
Cream of tartar	cwts.	3,275	2,064
Alizarine dyestuffs	cwts.	1,914	63
Barytes, including blanc fixe	cwts.	54,935	52,148
Unspecified painters' colours	cwts.	82,201	81,322
Calcium carbide	cwts.	42,155	28,355
Intermediate coal tar products, including aniline oil and salt and phenyl glycine	cwts.	6	—
Synthetic indigo	cwts.	—	—
Natural indigo	cwts.	64	12
Mercury	lbs.	251,092	150,899

DECREASES.		1924.	1923.
Acetic acid	tons	951	987
Tartaric acid	cwts.	3,121	4,616
Distilled glycerin	cwts.	20	302
Red lead and orange lead	cwts.	1,919	4,220
Zinc oxide	tons	751	811
Unspecified coal tar dyestuffs	cwts.	2,885	3,138
White lead	cwts.	6,632	7,427
Essential oils, except turpentine	lbs.	201,524	242,977
Nickel oxide	cwts.	62	3,614
Turpentine	cwts.	23,797	35,346

Exports for June

INCREASES.		1924.	1923.
Benzol and toluol	galls.	275,540	247,393
Carbolic acid	cwts.	12,619	8,123
Distilled glycerin	cwts.	17,295	5,815
Caustic soda	cwts.	145,295	117,380
Sodium chromate and bichromate	cwts.	6,455	4,171
Unspecified sodium compounds	cwts.	60,149	47,103
Potassium chromate and bichromate	cwts.	2,541	2,451
Potassium nitrate	cwts.	1,603	1,098
Coal tar dyestuffs	cwts.	9,802	9,191
Paints and colours ground in oil or water,	cwts.	29,115	29,099
Paints and enamels, prepared	cwts.	32,520	29,754

DECREASES.		1924.	1923.
Sulphuric acid	cwts.	1,145	2,779
Ammonium chloride	tons	230	337
Ammonium sulphate	tons	17,024	24,065
Anthracene	cwts.	—	—
Naphtha	galls.	6,496	39,020
Naphthalene	cwts.	2,387	19,303
Tar oil, creosote, &c.	galls.	2,092,392	8,577,741
Unspecified coal tar products	cwts.	26,427	41,933
Unspecified potassium compounds	cwts.	1,959	3,459
Barytes, including blanc fixe	cwts.	6,550	20,023
Tartaric acid	cwts.	1,056	1,086
Copper sulphate	tons	1,680	3,282
Crude glycerin	cwts.	407	4,580
Sodium carbonate, &c.	cwts.	500,817	564,615
Sodium sulphate, including salt cake	cwts.	121,306	151,884
Dyestuffs, other than coal tar	cwts.	4,092	4,673
White lead	cwts.	13,981	18,775
Unspecified painters' colours	cwts.	50,537	59,073

The Society of Chemical Industry

To the Editor of THE CHEMICAL AGE.

SIR,—As you indicate in your editorial of July 5, there are two serious points in the recently published performances of the above Society, and both of these must inevitably reflect upon those now in power. It is idle to attempt to explain the serious decline in membership solely by reference to "bad times," when other similar societies show no such falling off. The state of the Society's finances is still more serious. The autocratic and unconstitutional policy of radically altering the Society's *Journal* without appealing to the members through the Local Sections has already found its Nemesis, and the official explanations of the financial losses do not appear convincing. It is no secret that the main object of launching *Chemistry and Industry*, and of competing with the recognised trade journals, was to secure increased profits from advertisements; and some of those who should know state that the provision of £5,000 from the Society's invested capital was a *post hoc* allocation, after it was realised that the new venture was likely to be anything but a financial success. In his remarks to the Annual Meeting the Hon Treasurer took credit for the increase of £800 in advertisement *revenue*, but entirely omitted to state the net decline in profits under this head or to acknowledge the *net* loss of £5,000 —£6,000 and the failure to obtain outside sales of *Chemistry and Industry* of any magnitude. There is, further, abundant evidence that this publication does not appeal to the great majority of the members. The old Review Section, which it displaced, may have been dull, but it was dignified, well-written, and accurate. Its successor is of little use to the serious chemist, and the Society of Chemical Industry was not founded or endowed by its benefactors to tickle the palate of pseudo-chemists, who would find more entertainment in the *London Mail*. It is the old story of the ineptitude of purely amateur direction and control.

While it is satisfactory to learn that expenses have now been curtailed to give them a chance to hobnob with revenue, many will deplore the use of inferior paper for the *Transactions* and *Abstracts*. The only apparent remedy for past failure is for the Council to do now what it should have done two years ago, viz., to invite the opinions of members through their Local Sections as to whether it is worth while to proceed with the new publication, or if it should return to the old policy of making ends meet and giving members what they want rather than what a few consider they ought to have.—Yours, etc.

Chemical Industry Club, S.W.1. B. L. LAGER.
July 14.

Analysis of Brass and Gun Metal

To the Editor of THE CHEMICAL AGE.

SIR,—In answer to the letters of Messrs. Johnston and Pile, I venture to make the following replies.

It was clearly and distinctly stated, and must have been perfectly obvious to any trained chemist, that the method advocated was a rapid one. Despite this fact Mr. Pile comes to the conclusion that it was intended as a method specially noted for accuracy.

Mr. Johnston states—what is generally realised—that SnO_2 deposited by nitric acid may contain iron oxide. Why does he not attack Messrs. Walters and Affelder and others on the same grounds? Mr. Johnston goes on to describe the decomposition of "hypo" in respect of sulphuretted hydrogen gas "coming off." Mr. Pile refers to the same gas being "evolved." Both statements are inaccurate. Production means yield, not necessarily evolution.

Most of us are aware of the direct production of copper sulphide, and reference to the sulphur and sulphur dioxide was unnecessary in the short sentence allotted to a subject considered to be already well known. The precipitate deposited by "hypo." on testing is found to contain tin, the theoretical reasons for which were not advanced. The writer did not recommend its estimation at this point.

In stating that there should be "little risk of a loss of any solution" this obviously refers to those not previously experienced in the handling of troublesome hot liquors. The writer experienced no difficulty in retaining all liquor in "a large basin" provided with a suitable cover as stated. The total time required for the analysis is about one hour ten minutes. If the manipulator cares to risk taking the zinc content by difference, the results may be secured within fifty minutes. This surpasses the rapidity of the Walters and Affelder method, and is quite as accurate, the lead result being generally more reliable.—I remain, etc.

July 15. C. C. D.

Chemical Matters in Parliament

Indian University Degrees

Sir C. Yate (House of Commons, July 9) asked the Under-Secretary of State for India whether, considering the largely increased number of passes in the arts and science examinations of the Calcutta University, and the conclusion drawn that there has been a steady lowering of standard, the question of levelling up the standard of examinations in Indian universities to that of British universities, so as to secure the recognition of Indian examinations in the United Kingdom, has been put before the conference of delegates from the various universities in India at its meeting at Simla for consideration; and, if not, what steps it was proposed to take in the matter.

Mr. Richards said that no report of the proceedings of that conference had yet been received, but it was understood that the equivalence of Indian degrees and diplomas and their recognition in the United Kingdom was among the subjects for discussion.

Dangerous Drugs

Captain W. Benn (House of Commons, July 14) asked the Home Secretary how much opium was purchased by factories in Great Britain in 1923; how much morphia, how much heroin, and how much codeine was manufactured by the factories; and how much of each of these narcotics was sent abroad.

Mr. Henderson said he assumed that by "factories" was meant only those firms which were licensed under the Dangerous Drugs Acts to manufacture morphine and heroin and their salts. The amount of opium imported and purchased by those firms in 1923 was 125,833 lbs. The amount of morphine and its salts manufactured in 1923 was 254,337 oz., of which, however, 166,397 oz. was converted into heroin, codeine or other derivatives of opium, leaving a net total of 87,940 oz., of which 78,611 oz. was exported. The amount of heroin manufactured in 1923 was 11,575 oz., and the total exports of heroin amounted to 12,011 oz. The amount of codeine manufactured in 1923 was 162,036 oz., of which 160,910 oz. was exported by the manufacturers. As codeine is not subject to the Dangerous Drugs Acts, its movements are not recorded after it leaves the manufacturers, and it is not therefore known whether any other amounts of codeine were exported during 1923 by persons other than the manufacturers.

Petroleum in Transit

Mr. Groves (House of Commons, July 14) asked the Minister of Transport whether any special conditions were imposed upon the new petrol tank motors, with trailers attached, which were engaged in the transport of petrol for commercial purposes; whether he was aware that such vehicles imposed additional degrees of road danger upon the public; and whether he would restrict the speed limit of such vehicles accordingly.

Mr. Davies said that apart from conditions as to transport of petroleum which may be imposed by a local authority under Section 9 of the Petroleum Act, 1871, on licensees within their area, there are no special Regulations in the matter. The Government was aware of dangers of road transport for petroleum, and it was intended to deal with the subject in the Petroleum Bill of last Session, and the question of legislation would be revived as soon as Parliamentary time permits.

State Trading

Sir K. Wood (House of Commons, July 14) asked the Financial Secretary to the Treasury the loss recently sustained as the result of State trading in respect of transactions in Australian zinc, home-grown timber and various sugar operations.

Mr. Alexander referred the hon. Member to the recently published volume of trading accounts which contains the results of State trading in respect of transactions in Australian zinc, home-grown timber and the operations of the Royal Commission on the Sugar Supply to March 31, 1923. As regards Australian zinc he was unable to indicate at present the result of the operations for the year 1923-24.

From Week to Week

A NEW COMPANY has been formed in Sweden, at Gothenburg, to prepare insulin by a new method.

THE USE OF IODINE to test the maturity of pears for Eastern shipment is being employed in California.

IT IS STATED that 127 new types of dyes have been produced by American companies in the last two years.

OIL AND PETROL suitable for fuel are being extracted from rubber scrap on a commercial scale at Perak.

A NEW OIL GUSHER AT BAKU (Russia) is said to have yielded nearly 4,000 tons of oil during a period of sixty-three hours this week.

MEMBERS OF THE ROYAL SANITARY INSTITUTE attending the Conference at Liverpool inspected the Port Sunlight soap works on July 15.

MR. A. H. B. BISHOP, B.A., of Callington, Cornwall, has been appointed junior lecturer in chemistry at Westminster Training College.

A WELL-KNOWN CHEMIST and fuel expert, Mr. Alfred L. Booth, of Manchester, was on Saturday married to Miss J. Catlow, of Burnley.

THE DYE NEEDS of the Argentine for this year total 880,000 lb. It is estimated that 60 per cent represents blacks, chiefly direct and sulphur blacks.

CHEMICAL PLANT AND MACHINERY will be sold by auction at Atlas Works, West Ferry Road, Millwall, London, E., on July 28 and following days.

IN SPITE OF NEGOTIATIONS it is now officially announced that Gretna estate and factory will be sold by auction on July 22–25 as previously advertised.

FIRE DAMAGED the workroom and store of the Hygienic Perol Co., Ltd., manufacturing chemists, of 47, Rathbone Place, Oxford Street, London, on July 11.

PYROMUCIC ACID has been suggested as a preservative for organic substances such as glue, starch, and toilet creams. It is said that one per cent. of acid suffices.

FIRE HAS DESTROYED a building owned by J. Whitworth and Sons, Ltd., oil extractors, in Woodhouse Street, Leeds. Machinery and presses were also involved.

CROWNDALE MINE, Tavistock, believed to be rich in copper and arsenic, is shortly to be re-opened by Messrs. Taylor, of London, after a period of 70 years' inactivity.

A NEW ARTIFICIAL ASPHALT, made from hard rubber and oleic acid, combined by the use of sulphur and sulphuric acid, is being used in Germany for acid proof work.

A CONTRACT for the supply of quinine bihydrochloride for Crown Agents in Sierra Leone has been placed with Arthur H. Cox and Co., manufacturing chemists, of Brighton.

PROFESSOR SIR WM. J. POPE has been elected a foreign member of the Reale Accademia Nazionale dei Lincei, of Rome, in the Section of Physics and Chemistry and their Applications.

INVESTIGATIONS by the American Customs Service, Treasury Department, into the excess of sodium nitrite on the American market are now complete, and results are expected shortly.

AT THE CLOSE of the current session, Professor J. B. Cohen will retire from the chair of organic chemistry at Leeds University after being connected with the University since 1891.

AS COMPLAINTS HAVE BEEN MADE to Billingham Urban Council, the Synthetic Ammonia and Nitrate Co. are taking steps to remedy the alleged noxious fumes emanating from their works.

THE FRANKLIN MEDAL and honorary membership awarded by the Franklin Institute of Pensylvania were, on July 14, presented to Sir Ernest Rutherford, Cavendish professor of physics at Cambridge.

THE URAL REGIONS of Russia yield the second largest contribution to the world's output of asbestos, namely, about 10 to 15 per cent. The magnesium products of this region amount to 27,000 tons.

MR. R. JOHNSON, who is in London buying chemicals for V. Spalinger and Co., of Canton, can be communicated with care of Carroll, Mayne and Co., Ltd., 3, Sussex Place, Leadenhall Street, London, E.C.

PETROL PUMPS are included in the measuring instruments proposed by Lord Parmoor's Weights and Measures (Measuring Instruments) Bill 1924, to be brought within the scope of the Weights and Measures Acts.

MISS C. F. ELAM has been appointed to the research fellowship in metallurgy, valued at £500 a year for five years, given by the Worshipful Company of Armourers and Braziers, and awarded through the Royal Society.

ITALIAN SOAP MANUFACTURERS are to be asked by the Government to extract glycerin from their soap lyes, which have hitherto been wasted. At present Italy imports glycerin from England and the United States.

DR. LEO. H. BAEKELAND, President of the American Chemical Society, and professor of chemical engineering in Columbia University, has been made a Commander of the Order of Leopold by the King of Belgium.

MR. M. A. S. BARNETT, M.Sc. (University of New Zealand), a research student of Clare College, Cambridge, has been awarded the Denman Baynes Research Studentship of £100 a year for two years for research in physics.

THREE THOUSAND EMPLOYEES of Lever Bros., Ltd., of Port Sunlight, visited the British Empire Exhibition on July 14. This is the third of a series of five trips which will take a total of 15,000 workers from Port Sunlight to London.

THE FLINT GLASS industry in Birmingham and the Midlands is only moderately employed. Foreign competition is so acute in the cheaper branches of the trade that a large proportion of the furnaces in Birmingham and Stourbridge are idle.

CO-OPERATIVE CHEMICAL TRAINING has been started by the Drexel Institute, Philadelphia. Chemical engineering students will alternate between classroom and the laboratories of industrial chemical concerns, where they will be treated as paid employees.

MR. F. N. PICKETT, a former expert in the chemical division of the British Army, has arrived in New York to demonstrate a new liquid chemical poison for exterminating the cotton boll weevil. He will also explain to the U.S. Government means of minimising poisonous gas effects.

REPORTS STATE THAT, in view of the somewhat strained relations between Germany and Russia, a Berlin branch of the Russian Textile Syndicate is negotiating a number of contracts with British, French, Italian and American firms for importation of dyestuffs into Russia.

THE COMMITTEE appointed by the Secretary of State for the Colonies to inquire into various matters connected with East Africa includes Sir H. Birchenough, Government director of the British Dyestuffs Corporation; Major A. G. Church, M.P., Sir W. Edge, and Sir Sydney Henn.

MR. A. COCKSEDGE, manager of the shipping department of Charles Zimmermann and Co. (Chemicals), Ltd., St. Mary-at-Hill, London, E.C.3, is one of England's representatives in the Olympic Games at Paris. Mr. Cocksedge was also a member of the British Olympic team at Antwerp in 1920.

THE STAFF and friends of Benn Brothers, Ltd., held their annual outing on Saturday, July 12. It took the form of a river trip from Richmond to Chertsey. Among those present were the chairman, Sir Ernest Benn, Bt., Mr. H. P. Shapland (managing director), Mr. and Mrs. E. E. Starke, Mr. Henry Benn and Miss Benn.

ON THE PETITION of G. H. Barber and Son, of St. Swithin's Lane, E.C., Mr. Justice Romer in the Companies Winding-Up Court on Tuesday made an order for the compulsory liquidation of the C.V.O. Chemical Works (1919), Ltd. It was stated that the petitioners were judgment creditors for £199 11s., and there was no opposition.

APPLICATIONS ARE INVITED for the post of Superintendent of the Chemical Research Laboratory of the Department of Scientific and Industrial Research. Candidates, who must be distinguished in some branch of pure or applied chemistry, can obtain particulars from the Secretary of the Department, 16, Old Queen Street, London, S.W.1.

AMERICAN VISITORS to this country at present include Mr. A. C. Fieldner, superintendent of the Pittsburgh Experiment Station of the U.S. Bureau of Mines. Mr. Fieldner is over here making exhaustive inquiries into fuel and safety problems, and expects to remain for some weeks investigating the research and experiment organisation in this country. He was an interested visitor at the annual meeting of the Society of Chemical Industry in Liverpool last week, where he met Dr. Lessing and other well-known fuel authorities.

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NITRO COMPOUNDS.—Nitro derivatives of *p*-aminophenol and *p*-aminophenoxyacetic acid. A. Girard. *Bull. Soc. Chim.*, June, 1924, pp. 772–779.

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REACTIONS.—The action of sulphuric acid on some amino-acids and on the vinasses from the distillation of molasses. P. G. Kronacker. *Bull. Soc. Chim. Belg.*, April, 1924, pp. 217–231.

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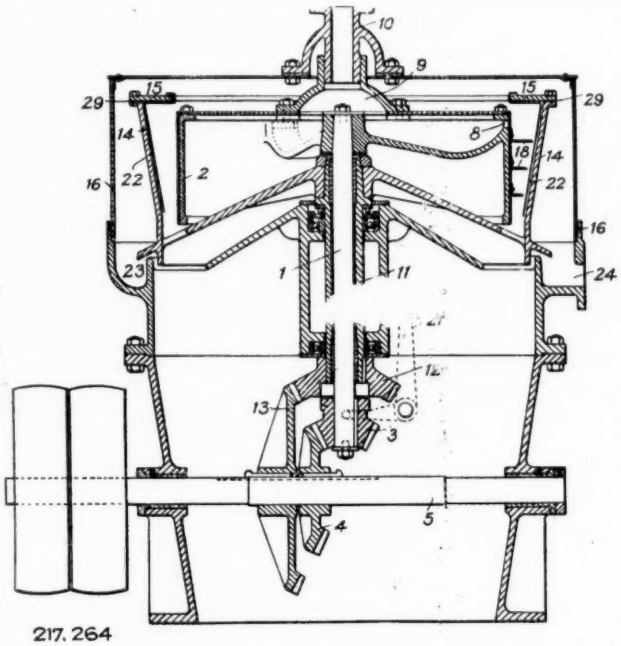
Some applications of constant boiling mixtures to the preparation of organic compounds. H. Wuyts. *Bull. Soc. Chim. Belg.*, March, 1924, pp. 167–192.

Patent Literature

Abstracts of Complete Specifications

217,264. Centrifugal Separator. Lilleshall Co., Ltd., and C. A. Bishop, Oakengates, Shropshire. Application date, October 20, 1923.

A vertical shaft 1 carries at the upper end a rotor 2, and at the lower end a bevel gear wheel 3 which meshes with a bevel gear wheel 4, mounted on the driving shaft 5. The rotor 2 is



217. 264

provided with radial curved channels 8, the outer ends of which are tangential or radial. The channels 8 communicate with the central channels 9 having an inlet 10. A tubular shaft 11 carries at its upper end a second rotor 14, and at its lower end a bevel gear wheel 12 which meshes with a bevel wheel 13 carried by the driving shaft 5. The rotor 14 is provided with a flange 15 spaced from it to provide an outlet 29. The outer wall of the rotor 2 is provided with spiral scrapers 18, and the inner wall of the rotor 14 is provided with longitudinal grooves, and is covered by a filter cloth 22. The bevel wheel 3 may be clutched directly to the bevel wheel 12 by means of an axial movement controlled by the hand lever 21. Liquid supplied through the inlet 10 passes outwards through the channels 8, and is thrown against a filter cloth 22. The shafts 1, 11, and consequently the rotors 2, 14, rotate at different speeds so that any solid matter deposited on the cloth 22 is removed and drops into the casing 16. Liquid which passes through the filter cloth runs along the grooves in the rotor 14 to the openings 29, from which it falls into the trough 23, and thence to the outlet 24. Clogging of the filter cloth 22 is prevented by the spiral scrapers 18, which remove the solid material and allow it to fall. If it is required to dry the deposited solid material the shafts 1, 11 are clutched together so that they are driven at the same speed, and the solid material is therefore not removed by the scrapers 18. If substances of a glutinous nature are treated, they may be mixed with Kieselguhr or other finely powdered absorbent to prevent clogging of the filter cloth.

217,376. Aluminium and Silicon and other Elements from Aluminiferous Substances such as Clay or Bauxite, Production of. L. D. Hooper, Highfield Lodge, Malvern, Worcestershire. Application date, April 14, 1923.

The process is for the production of aluminium and silicon from aluminiferous substances such as bauxite or clay, and is particularly suitable for treating ores containing iron impurities. Alumina may be obtained in a very pure condition and silicon may be obtained free from phosphorus and sulphur. The bauxite or clay is mixed with a reducing agent sufficient to reduce all the oxides except alumina. The mixture may be in a form suitable for ignition, or for chemical reaction under heat treatment. The reduction may be effected in air or other gas, and under pressure or *in vacuo*, depending on the composition of the ore. Thus, ores rich in titanium are reduced in an atmosphere free from nitrogen. Further, in some cases aluminium nitride or aluminium carbide may be formed if the reaction is effected in the presence of nitrogen. A flux such as feldspar or cryolite may be added. In some cases a proportion of silicon, ferro-silicon, silicon carbide, or iron may also be added to the mixture to facilitate the reduction. The reduction is effected with aluminium, which is added in excess of that theoretically necessary.

In one class of ores, it is possible by adding sufficient iron, to form a regulus which may be separated from the alumina when molten, and in this case the reduction may be effected in the chamber in which the alumina is afterwards to be electrolysed. The reduced metals and silicon may be drawn off, leaving the pure alumina and flux. The alumina is derived both from the original ore and from the added aluminium, and is then electrolysed. The process is cyclic and no addition of aluminium is necessary.

In another class of ores, it is not possible to obtain a satisfactory regulus, but in such cases the iron is more intimately associated with the other metals and silicon than with the alumina, so that the mixture may be disintegrated, and the alumina separated by magnetic means. Reference is directed in pursuance of Section 7, Sub-section 4 of the Patents and Designs Acts, 1907 and 1919, to Specifications No. 6,132/1902, 14,572/1900.

217,414. Electrolytic Processes. W. J. Mellersh-Jackson, London. From the Mathieson Alkali Works, Inc., 25, West 43rd Street, Manhattan, New York. Application date, May 28, 1923.

This process is more particularly for the electrolysis of sodium or potassium chloride solutions in cells having a mercury cathode. In the Castner process, a solution of commercial salt is continuously circulated through the cells so that only a small part is decomposed at each passage. The greater part of the entrained chlorine is removed, but about 0·5 grams per litre remains in the solution. The solution then passes through a bed of salt to be resaturated. When the salt contains impurities such as iron, this passes into the cells and decreases the efficiency, as well as liberating hydrogen. This action of the iron is increased by the presence of calcium and magnesium salts. It is now found that the iron which is dissolved by the action of the chlorine during resaturation can be precipitated by reaction with constituents normally present in the brine, provided sufficient time is given. The precipitate may then be removed by filtering the chlorinated brine before it returns to the cell. It is found that about one hour is necessary for the precipitation at a temperature about 60° C. The precipitation is probably due to the presence of a small proportion of hypochlorite in the brine, and if necessary small amounts of this salt may be added to cause a more rapid precipitation of the iron. Other impurities such as manganese compounds are removed with the iron.

217,428. Rotary Distillation Retorts. G. E. Heyl, 36, Victoria Street, London, S.W.1. Application date, June 27, 1923.

The material in a rotary retort is kept in a fine state of division and in intimate mixture by providing loose heavy metal balls within the retort to grind the material by their impact during the rotation of the retort. For this purpose, the retort is internally strengthened by a steel plate lining. It is found that the grinding balls assist in transferring the heat from the walls of the retort to the material, so that the distillation is effected in a shorter time.

217,467. Formic Acid, Manufacture and Production of. J. Y. Johnson, London. From Badische Anilin & Soda Fabrik, Ludwigshafen-on-Rhine, Germany. Application date, August 20, 1923.

The process is for producing formic acid by the decomposition of ammonium formate. It is known that in the decomposi-

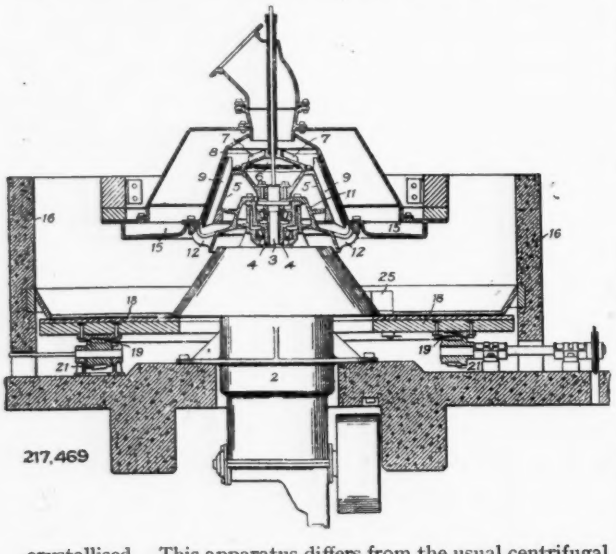
tion of formate by sulphuric acid liberation of heat must be checked to avoid decomposition of the formic acid. It is now found that this may be done by mixing the ammonium formate with formamide and then treating it with sulphuric acid. The formamide acts as a diluent, and is also converted into formic acid and ammonium salt. It is necessary that water should be present in the proportion of at least one molecular part to each molecular part of formamide. The ammonium formate may be dissolved in formamide, or only so much of the latter may be employed as to form a paste with the formate. To produce the paste ammonium formate may be heated until the desired degree of dehydration is obtained. The mixture may be directly produced by the reaction of carbon monoxide, ammonia and water under pressure. In an example, a paste consisting of 630 parts of powdered ammonium formate and 120 parts of formamide is treated with 645·5 parts of sulphuric acid of 96 per cent. strength, and 22 parts of water. The temperature is raised to distill off the formic acid, and the distillation is completed *in vacuo*. A yield of over 90 per cent. is obtained.

217,468. Soda, Recovering from its Solutions. W. M. Wallace, Randolph Hill, Denny, Stirlingshire. Application date, August 20, 1923.

The process is for recovering spent caustic soda from a solution, especially that employed in the treatment of esparto or other fibres. The object is to avoid the disadvantages of the usual method, in which the solution is evaporated to 60° Tw., then treated in a rotary furnace, and the ash then tipped upon a floor to burn off the impurities, and then conveying the ash to the causticising pots. In this invention, a travelling grate is provided at the end of the rotary furnace, so that, after issuing from the furnace, the ash is further burnt by air passing up through it. The ash is then transferred immediately to the causticising pots. The grate may be similar to the chain feed stokers employed for feeding coal in boiler furnaces, or it may be a rotating perforated drum, or a vibrating perforated inclined plate. This method effects a considerable economy in labour and fuel.

217,469. Removal of Free Moisture from Substances by Centrifugal Means. G. H. Elmore, the South Yorkshire Chemical Works, Parkgate, near Rotherham, Yorks. From R. C. Comley, Swarthmore, Pa., U.S.A. Application date, August 21, 1923.

This apparatus is for removing free moisture from salt, sugar, and similar substances which are partly or completely



crystallised. This apparatus differs from the usual centrifugal separator in that the moist particles thrown off from the rotating separator are given a considerable free path through the air before reaching the surrounding casing. This enables the moisture to be evaporated or crystallised before the particles come into contact with any surface. The particles are also caused to meet the surrounding casing at a small angle, so as to lessen the impact and thus prevent the deposition of any free moisture remaining. A vertical shaft 3 carries at its upper end an imperforate conical rotor 5 surmounted by a flat cone 6, having ribs 7 on its upper surface to distribute the inflowing material into the annular space between the circumference of the rotor 5 and the second conical rotor 8. To prevent accumulation of material in this annular space, the rotor 5 carries inclined blades 9. The tubular shaft 4 carries a member 11, having radial arms 12 which support the outer rotor 8. The inner walls of the rotor 8 have a lining of perforated metal, and are themselves perforated to allow the escape of liquid. The shafts 3 and 4 are driven at slightly different speeds in the same direction. The extracted liquid passes through a trough 15 to the outlet. The enclosing wall 16 is at some distance from the rotor 8, and the solid material is discharged at the lower end of the rotor 8 in the form of a nearly horizontal sheet or curtain in which each particle is moving tangentially. The particles have thus a considerable free travel before striking the wall 16 at an acute angle, after which they tend to glide over the surface.

The solid material is received on an annular platform 18, which carries a circular rack 19 so that the platform may be rotated by gearing 21. The material is guided to a discharge opening by means of a spiral deflector 25, projecting from the casing 2. In a modified construction the material discharged by the rotor may be projected upwards, so that a large free travel for the particles can be obtained within an enclosure of smaller radius. The air or other medium into which the material is discharged may be specially dried to enable it to take the free moisture more readily. The degree of dryness obtainable in this apparatus depends upon the physical nature of the surface of the particles. In the case of crystalline substances having smooth non-absorbent surfaces, *e.g.*, common salt, the moisture content may be reduced from 30 per cent. to about 2-5 per cent. In the case of finer crystals such as those of sodium bi-carbonate the moisture left in the crystals may be slightly higher.

Note.—Abstracts of the following specifications, which are now accepted, appeared in The Chemical Age when they became open to inspection under the International Convention :—193,057 (D. W. Berlin) relating to a method of reducing metallic oxides, see Vol VIII, p. 434 ; 203,714 (J. Duclaux) relating to the manufacture of ultra filter membranes, see Vol. IX, p. 581 ; 204,052 (Soc. Ricard, Allenet et Cie) relating to the vulcanisation of indiarubber, see Vol. IX, p. 550 ; 206,489 (Soc. des Produits Azotes) relating to the isolation of urea, see Vol. X, p. 72 ; 210,462 (Chemische Fabrik Griesheim Elektron) relating to the production of azo dyestuffs from arylamides of 2 : 3-oxynaphthoic acid, see Vol. X, p. 390 ; 213,886 (K. D. P., Ltd.) relating to the manufacture of caoutchouc, see Vol. X, p. 603.

International Specifications not yet Accepted

215,705. Glucose, Starch, and Dextrin. Dextrin Automat Ges., 26, Barawitzkagasse, Vienna. International Convention date, May 9, 1923.

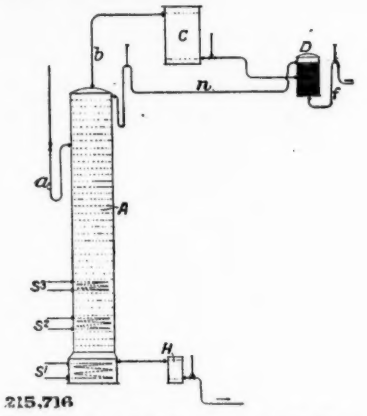
Starch is added to boiling acid which is agitated and heated by jets of hot air, and the vessel is closed and the boiling continued to increase the pressure and saccharify the starch. A temperature of 100°–105° C. and pressure of 3–6 atmospheres is employed.

215,716. Dehydrating Organic Liquids. Soc. Ricard, Allenet et Cie, Distilleries des Deux-Sèvres, Melle, Deux-Sèvres, France. International Convention date, May 9, 1923.

Organic liquids are distilled with another liquid so that the mixture boils at a lower temperature than either of the constituents. The condensate forms two layers, one of which contains most of the added liquid and is returned to the still. In an example in which glycerine is distilled, a column A is heated by steam coils S^1, S^2, S^3, toluene is placed on the plates, and glycerine is added through a pipe *a*. The mixture distils at about 84° C., and the vapour passes to a condenser C and receiver D. Two layers are formed, the lower consisting of water which is discharged, and the upper consisting of toluene which is returned by pipe *n* to the still. Dehydrated glycerine is drawn off from the bottom of the still.

Propyl alcohol may be distilled with trichlorethylene, and the lower layer of the condensate containing mainly trichlorethy-

lene is returned to the still. The upper layer is passed through two small distilling columns, in the first of which mainly trichlorethylene vapour is obtained and is passed into the pipe *b*, and in the second of which propyl alcohol vapour is obtained and is passed into the column A.



215,716

215,769. DYES. Farbenfabriken vorm. F. Bayer and Co., Leverkusen, near Cologne, Germany. International Convention date, May 7, 1923.

Tetrazotized 4 : 4¹-diamino-diphenylurea-3 : 3¹-dicarboxylic acid is coupled with azo dye components to produce disazo dyes; or 5-nitro- or 5-acidylamino-2-aminobenzoic acid is diazotized and coupled with an azo dye component, the nitro group reduced or the acidylamino group saponified, and the aminoazo dye treated with phosgene. An example is given of the coupling of the tetrazo compound with 1-*m*-aminophenyl-3-methyl-5-pyrazolone; also the tetrazo compound and acetoacetic-*o*-anisidide or acetoacetic anilide-*p*-carboxylic acid. Yellow to red shades are obtained on cotton.

215,782. DYES. Farbwerke vorm. Meister, Lucius, and Bruning, Hoechst-on-Main, Germany. International Convention date, May 9, 1923.

Nitrogen-containing compounds obtained by the action of nitrating agents on 2 : 2-dibenzanthronyl are treated with alkaline condensing agents such as caustic alkali to obtain vat dyestuffs. In an example, nitro-2 : 2-dibenzanthronyl is fused with caustic potash and alcohol at 225°–230° C., then dissolved in water, treated with air, and acidified.

215,783. DYEING CELLULOSE ACETATE. Farbenfabriken vorm. F. Bayer and Co., Leverkusen, near Cologne, Germany. International Convention date, May 9, 1923. Addition to 215,373.

Specification 215,373 (see THE CHEMICAL AGE, Vol. XI, p. 46) describes a method of dyeing cellulose acetate silk with basic dyes, in the presence of pyridine or a homologue. In this invention the pyridine is replaced by a hydrogenised pyridine such as piperidine, or by a heterocyclic, aromatic, or aliphatic base or a urea or derivative such as guanidine or creatinine. An example of such dyeing is given.

216,083. ALKYL AND ARYL-LEAD COMPOUNDS. General Motors Research Corporation, Dayton, Ohio, U.S.A. (Assignees of T. Midgley, 813, Ferndale Avenue, Dayton, Ohio, U.S.A.). International Convention date, May 19, 1923.

Alkyl or aryl halides are treated with lead in the presence of a reducing agent and a catalyst. Lead dialkyl or diaryl compounds are first formed and are then converted into lead tetra-alkyl or tetra-aryl compounds. Suitable reducing agents are silicon, ferro-silicon, or a metal such as sodium or zinc with a liquid such as water, caustic soda, or ethyl acetate solution, which yields nascent hydrogen. Suitable catalysts are those used for the Grignard reaction, ether, primary, secondary and tertiary amines, and their alkyl halide addition products, such as aniline, methyl- and diethyl-aniline, toluidine, diphenylamine, phenyline diamine, triethylamine, butylamine, amylamine, pyridine, piperidine, carbozole, phenyl hydrazine, triethylphenyl-ammonium iodide, acetamide, ether, ammonia, and quinoline. In an example, lead tetra-ethyl is obtained by heating a sodium-lead alloy, Na_4Pb, with ethyl, methyl-propyl, isopropyl, amyl or phenyl bromide, iodide, or chloride, together with pyridine and water under pressure.

LATEST NOTIFICATIONS.

218,615. Manufacture of normal butyl alcohol. Ricard, Allenet et Cie. July 7, 1923.

218,628. Process for the manufacture of a highly-active decolourising charcoal. Clemm, Dr. H. Muller-. July 5, 1923.

218,629. Production of aluminium compounds for paper-making purposes and other industrial uses. Amber Size and Chemical Co., Ltd. July 2, 1923.

218,638. Synthetic resins, and process of making the same. Terwilliger, C. O. July 5, 1923.

218,662. Process of manufacture of absolute alcohol. Distilleries des Deux-Sevres (formerly Soc. Ricard, Allenet et Cie.). July 6, 1923.

Specifications Accepted with Date of Application

191,037. Hydrocarbons, particularly crude petroleum, Process for the treatment of. W. Dederich. (*P. von Ditmar.*) December 22, 1922.

194,286. Crude turpentine oils, Process of purifying. B. R. Armour. March 1, 1922.

200, 482. Liquor accruing from the lixiviation of vegetable matter, Process of treating. L. J. B. A. Colas, A. P. J. Colas, and L'Alpha, Soc. Anon. pour la Fabrikation des Pâtes de Cellulose. July 5, 1922.

202,952. Rustless iron and steel, Method for producing. D. W Berlin. August 28, 1922.

209,722. Alkyl-halides, Manufacture of. J. P. Wibaut. January 12, 1923.

201,520. Ferrochrome and other ferrous alloys, Method of producing. D. W. Berlin, July 26, 1922.

217,963. Steel, and process for manufacture therefore. W. P. Thompson. (*Commercial Steel Co.*) March 15, 1923.

217,969. Coal gas, Apparatus for the manufacture of. T. J. Ashley, and Aldridge and Ranken, Ltd. March 19, 1923.

217,976. Metal oxides or similar products, Process for producing. M. Gjersoe. March 22, 1923.

217,988. Barium peroxide, Manufacture of. R. Stewart and B. Laporte, Ltd. March 26, 1923.

217,991. Alloys. E. C. R. Marks. (*Kemet Laboratories, Inc.*) March 26, 1923.

217,943. Metallurgical furnaces. F. H. Loftus. January 22, 1923.

217,998. Combustible gas, Manufacture or production of. C. B. Tully. March 27, 1923.

218,012. Froth flotation concentration of ores and the like. Minerals Separation, Ltd. (*Minerals Separation North American Corporation, Ltd.*) March 29, 1923.

218,014. Soluble acid calcium salts of inosite phosphoric acid, Manufacture of. O. Y. Imray. (*Soc. of Chemical Industry in Basle.*) March 29, 1923.

218,034. Phenol and phenolic bodies, Manufacture of. D. Tyrer. April 12, 1923.

218,053. Treating gases for removing carbon disulphide. South Metropolitan Gas Co., E. V. Evans, and H. Stanier. April 28, 1923.

218,054. Synthetic resin. A Bau. April 30, 1923.

218,119. Mixture of lead suboxide and metallic lead, Method of manufacturing. G. Shimadzu. July 18, 1923.

218,154. Oleo stearate of glyceryl, Manufacture of. S. A. Walton and Tokalon, Ltd. September 6, 1923.

Applications for Patents

Akt.-Ges. für Anilin-Fabrikation. Manufacture of vanillin. 16,634. July 10. (Germany, July 28, 1923.)

Burdick, J. N. Process of making olefin oxides. 16,507. July 9.

Deiders, H. Process for preventing formation of and for removal of boiler scale. 16,430. July 9.

Farbwerke vorm. Meister, Lucius and Brüning. Manufacture of dyestuffs. 16,407. July 8. (Germany, July 23, 1923.)

Heyl, G. E. Distillation and utilisation of oil shale, etc. 16,285. July 7.

Legeler, E. Production of carbon disulphide. 16,704. July 11.

Minerals Separation, Ltd. Concentration of ores. 16,787. July 12.

Morton Sundour Fabrics, Ltd., and Wylam, B. Dyes and dyeing. 16,805. July 12.

Niece, F. G. Apparatus for treating hydrocarbons. 16,726. July 11.

Plauson's (Parent Co.), Ltd., and Plauson, H. Materials for use in rubber mixings, etc. 16,422. July 9.

—— Production, etc., of sulphur soaps. 16,647. July 11.

Refractories Process Corporation. Processes for manufacturing high refractories. 16,497. July 9. (United States, August 14, 1923.)

—— Metallurgical furnace roof. 16,948. July 9. (United States, August 14, 1923.)

Soc. of Chemical Industry in Basle. Manufacture of acylated diamines. 16,406. July 8. (Switzerland, July 17, 1923.)

Spence and Sons, Ltd., P., and Spence, H. Production of ferric sulphate. 16,342. July 8.

Techno-Chemical Laboratories, Ltd., and Testrup, N. Treatment of peat. 16,793. July 12.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co. Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing those firms' independent and impartial opinions.

London, July 16, 1924.

THE improvement noted in our report of last week has been pretty well maintained, and there are a larger number of orders in evidence, although these are still of comparatively small dimensions. Considering the imminence of the holiday season, the position generally can be taken as being quite satisfactory. Export business is moderately satisfactory, with a better volume of enquiry in evidence.

General Chemicals

ACETONE maintains its firm position; there is very little on the spot and prices are firming up for forward delivery. The outlook is good.

ACID ACETIC continues unsteady, and there is selling pressure in one or two quarters; the technical quality may be quoted an easy market at £43 10s. per ton, ex wharf.

ACID CITRIC.—A little better demand is noticed, but, considering the season, trade cannot be considered any too active. We close firm at 1s. 6d. per lb., less 5%.

ACID FORMIC is a shade steadier, with business poor, and the price is quiet at £56 per ton for 85%.

ACID LACTIC is unchanged in value at £44 per ton for 50% by weight, and only in moderate demand.

ACID OXALIC is now steadier, and the demand appears to be a little more active; it may be obtained at 4¼d. to 4½d. per lb., according to position.

ACID TARTARIC is extremely firm, and holders quote 1s. 1½d. per lb. less 5%.

ALUM is in steady demand at present makers' figures.

ARSENIC continues quiet, although there have been a few inquiries from America; price continues easy at about £46 per ton.

BARIUM CHLORIDE.—British makers are well sold, and the price is inclined to advance; the average value can be taken to-day at £14 to £14 10s. per ton.

COPPER SULPHATE.—Only a small business is reported, and unchanged in value.

CREAM OF TARATAR continues very firm and in good request; it is quoted at £85 per ton less 2½%.

CALCIUM CHLORIDE is inclined to be a little higher in price and is quoted at £5 per ton, the seasonable demand being satisfactory.

EPSOM SALTS are firm and inclined to rise; prices quoted generally are £4 10s. to £5 per ton.

FORMALDEHYDE is firmer and is quoted to-day at £54 per ton on the spot in fair quantities.

LEAD ACETATE has been active and the price is without change; the present value is round about £48 per ton, with makers well sold ahead.

POTASSIUM CARBONATE continues quiet, with little business and price in buyers' favour at £24 per ton.

POTASSIUM BICHROMATE.—Only a small business is reported at the new figures.

POTASSIUM PERMANGANATE continues easy and spot material is offered at 7¾d. to 8d. per lb.

POTASSIUM PRUSSIATE is steady, with a little more business offering; it is quoted at 8d. to 8½d. per lb. according to quantity and position.

SODIUM ACETATE is in fair request and is moderately firm at £23 10s. to £24 per ton.

SODIUM BICHROMATE is unchanged.

SODIUM HYPOSULPHITE.—Quite a good business is reported at the present English makers' price of £9 15s. per ton.

SODIUM NITRITE is active and stocks are moving readily at £28 per ton.

SODIUM PRUSSIATE.—This market seems to have steadied somewhat, and holders are not so anxious to liquidate; the price is nominally 4½d. per lb.

SODIUM SULPHIDE is unchanged in value and in moderate request at British makers' figure of £14 per ton.

ZINC SULPHATE.—A fair business is reported at the market value of £14 per ton.

Coal Tar Products

The market for coal tar products continues to be very quiet, and there is no new feature to report.

90% BENZOL remains stationary at 1s. 6½d. to 1s. 7d. per gallon on rails.

PURE BENZOL is also stationary at 1s. 11d. per gallon on rails.

CREOSOTE OIL is distinctly weaker, and can be bought from 5¾d. to 6d. per gallon on rails in the north, while the price in London is from 6¾d. to 7d. per gallon.

CRESYLIC ACID is in little demand, the value being from 2s. to 2s. 1d. per gallon f.o.r. for the Pale quality 97/99%, while the Dark quality 95/97% remains steady at about 1s. 9d. per gallon on rails.

SOLVENT NAPHTHA is rather more plentiful, and is worth 1s. 1d. per gallon on rails.

HEAVY NAPHTHA remains unchanged at 1s. 2d. per gallon on rails.

NAPHTHALENES.—There is no demand for the higher qualities. 76/78° melting point can be obtained at from £7 to £7 10s. per ton, or perhaps at slightly less, while 74/76 melting point is worth £6 10s. per ton. The low grade qualities are quite plentiful, the value being from £5 to £5 10s. per ton.

PITCH.—There is no demand owing to the warm weather and business is at a standstill.

Sulphate of Ammonia

SULPHATE OF AMMONIA.—Inquiries for export are more numerous and prices are firm.

British Oxygen Co.'s Success

AT the annual meeting of the British Oxygen Co., held on July 10 in London, Mr. E. B. Ellice-Clark, in moving the adoption of the report and accounts, stated that the net profits of the company showed an increase of £18,478, or 14 per cent., as compared with the previous year, and pointed out that this satisfactory result was not due to increased prices charged for oxygen, other gases, and accessories, as these, on the contrary, had been considerably reduced, but to improved and more economical methods of production and the installation of larger plants to cope with the increasing demand due in some measure to the reduction in prices.

Mr. K. S. Murray, the managing director, in seconding the chairman's resolution, congratulated the shareholders on the fact that the company had experienced the most successful financial year in its history. He considered that one of the healthiest features of the company's business during the past year had been the substantial reductions in price which they had been able to make, not only in oxygen and other gases, but on the engineering side of the business as well. All this had been mainly due to the increased demand for the company's products, and if that continued, further reduction should be possible. All that was wanted was a genuine revival in the engineering trade, and he thought that would come if politicians would leave the trade to work out its own salvation. The report and accounts were unanimously adopted, and the resolutions for the increase of the capital and the capitalisation of the share premium account were carried unanimously.

Explosions with Dichlorethylene

DICHLORETHYLENE is usually regarded as a safe non-inflammable solvent, which is being used in greater quantities in industrial work for that very reason, but in view of recent reports published in Germany in the *Chemiker Zeitung* and the *Berichte* it is clear that under certain circumstances it may produce a spontaneously explosive decomposition product, chloracetylene. This results apparantly only on boiling with alcoholic potash or soda, according to the following reaction:— $CHCl.CHCl = CCl \vdots CH + HCl$. It should therefore be carefully noted that dichlorethylene should not be brought in contact with these reagents, or the results may be disastrous. Trichlorethylene has also been noted to behave in a similar manner.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at sellers' works.

General Heavy Chemicals

All grades of Boric Acid have been reduced by £3 per ton as from June 11. Borax prices remain unchanged. Prices remain generally steady.

Acid Acetic 40% Tech.—£23 10s. per ton.
Acid Boric, Commercial.—Crystal, £45 per ton. Powder, £47 per ton
Acid Hydrochloric.—3s. 9d. to 6s. per carboy d/d., according to purity, strength and locality.
Acid Nitric 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.
Acid Sulphuric.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 65s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
Ammonia Alkali.—£6 15s. per ton f.o.r. Special terms for contracts.
Bleaching Powder.—Spot, £11 d/d.; Contract, £10 d/d. 4 ton lots.
Bisulphite of Lime.—£7 per ton, packages extra.
Borax, Commercial.—Crystal, £25 per ton. Powder, £26 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)
Calcium Chloride.—£5 17s. 6d. per ton d/d.
Methylated Spirit 64 O.P.—Industrial, 3s. 1d. to 3s. 5d. per gall. Mineralised, 4s. 2d. to 4s. 6d. per gall., in each case according to quantity.
Potash Caustic.—£30 to £33 per ton.
Potassium Bichromate.—5½d. per lb.
Potassium Chlorate.—3d. to 4d. per lb.
Salammoniac.—£32 per ton d/d.
Salt Cake.—£3 10s. per ton d/d.
Soda Caustic, Solid.—Spot lots delivered, £16 7s. 6d. to £19 7s. 6d. per ton, according to strength; 20s. less for contracts.
Soda Crystals.—£5 5s. to £5 10s. per ton ex railway depots or ports.
Sodium Acetate 97/98%.—£24 per ton.
Sodium Bicarbonate.—£10 10s. per ton carr. paid.
Sodium Bichromate.—4½d. per lb.
Sodium Bisulphite Powder 60/62%.—£18 to £19 per ton according to quantity, f.o.b., 1-cwt. iron drums included.
Sodium Chlorate.—3d. per lb.
Sodium Nitrate refined 96%.—£13 5s. to £13 10s. per ton, ex Liverpool. Nominal.
Sodium Nitrite 100% basis.—£27 per ton d/d.
Sodium Sulphide conc. 60/65.—About £14 10s. per ton d/d.
Sodium Sulphide Crystals.—£9 per ton d/d.
Sodium Sulphite, Pea Crystals.—£15 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

Prices in this section show some irregularity, according to district. In the north-eastern counties, for instance, anthracene oil, solvent naphtha, and naphthalenes are cheaper than in Lancashire or London. On the other hand, crude carbolic and creosote are dearer.

Acid Carbolic Crystals.—6½d. to 6¾d. per lb. Fair inquiry. Crude 60's, 1s. 9d. to 2s. per gall., according to district. Still quiet but slightly firmer.
Acid Cresylic 97/99.—2s. 1d. to 2s. 2d. per gall. Demand still good. Market firm. Pale 95%, 1s. 10d. to 1s. 11d. per gall. Steady demand. Dark, 1s. 10d. to 1s. 11d. per gall. Steady business.
Anthracene Paste 40%.—4d. per unit per cwt. Nominal price. No business.
Anthracene Oil, Strained.—8¼d. to 9½d. per gall. Quiet. Unstrained, 7¼d. to 8½d. per gall.
Benzol.—Crude 65's.—10½d. to 1s. per gall., ex works in tank wagons. Standard Motor, 1s. 4½d. to 1s. 6d. per gall., ex works in tank wagons. Pure, 1s. 8½d. to 1s. 10d. per gall., ex works in tank wagons.
Toluol.—90%, 1s. 5½d. per gall. Pure, 1s. 8d. to 2s. per gall.
Xylol Commercial.—2s. 3d. per gall. Pure, 3s. 3d. per gall.
Creosote.—Cresylic, 20/24%, 9d. to 9½d. per gall. Few inquiries. Middle Oil, Heavy, 5½d. to 6d. per gall., according to grade and district. Market weaker. Standard specification, 6d. to 8d. per gall.
Naphtha.—Crude, 8d. to 9d. per gall. Solvent 90/160, 1s. 1d. to 1s. 4d. per gall. Rather better inquiry. Solvent 90/190, 1s. to 1s. 2d. per gall. Fair business passing.
Naphthalene Crude.—Drained Creosote Salts, £4 to £6 10s. per ton. Quiet. Whizzed or hot pressed, £9 per ton. Little business.
Naphthalene.—Crystals and Flaked, £13 to £17 per ton in Yorkshire and London respectively. Market quiet.
Pitch.—52s. 6d. to 57s. 6d. per ton, f.o.b. for next season.
Pyridine.—90/160, 19s. to 20s. per gall. Market less firm. Heavy, 12s. to 12s. 6d. Little business.

Intermediates and Dyes

There has been an appreciable increase in dyestuffs business during the past week. Prices remain unaltered.

In the following list of Intermediates delivered prices include packages except where otherwise stated.

Acetic Anhydride 95%.—1s. 7d. per lb.
Acid H.—4s. 3d. per lb. 100% basis d/d.
Acid Naphthionic.—2s. 4d. per lb. 100% basis d/d.
Acid Neville and Winther.—5s. 8d. per lb. 100% basis d/d.
Acid Salicylic, technical.—1s. 1d. per lb. Improved demand.
Acid Sulphanilic.—9½d. per lb. 100% basis d/d.
Aluminium Chloride, anhydrous.—1s. per lb. d/d.
Aniline Oil.—7¾d. to 8¼d. per lb. naked at works.
Aniline Salts.—7¾d. to 9d. per lb. naked at works.
Antimony Pentachloride.—1s. per lb. d/d.
Benzidine Base.—4s. 6d. per lb. 100% basis d/d.
Benzyl Chloride 95%.—1s. 1d. per lb.
p-Chlorphenol.—4s. 3d. per lb. d/d.
p-Chloraniline.—3s. per lb. 100% basis.
o-Cresol 19/31° C.—4½d. per lb. Demand steady.
m-Cresol 98/100%.—2s. 1d. to 2s. 3d. per lb. Demand moderate.
p-Cresol 32/34° C.—2s. 1d. to 2s. 3d. per lb. Demand moderate.
Dichloraniline.—2s. 3d. to 3s. per lb.
Dichloraniline S. Acid.—2s. 6d. per lb. 100% basis.
p-Dichlorbenzol.—£85 per ton.
Diethylaniline.—4s. 9d. per lb. d/d., packages extra, returnable.
Dimethyaniline.—2s. 4d. per lb. d/d. Drums extra.
Dinitrobenzene.—9d. per lb. naked at works.
Dinitrochlorbenzol.—£84 10s. per ton d/d.
Dinitrotoluene.—48/50° C. 8d. to 9d. per lb. naked at works. 66/68° C. 1s. 2d. per lb. naked at works.
Diphenylamine.—3s. per lb. d/d.
Monochlorbenzol.—£63 per ton.
B-Naphthol.—1s. 1d. per lb. d/d.
a-Naphthylamine.—1s. 4½d. per lb. d/d.
B-Naphthylamine.—4s. per lb. d/d.
m-Nitraniline.—5s. 3d. per lb. d/d.
p-Nitraniline.—2s. 4d. per lb. d/d.
Nitrobenzene.—5½d. to 5¾d. per lb. naked at works.
o-Nitrochlorbenzol.—2s. per lb. 100% basis d/d.
Nitronapthalene.—11¾d. per lb. d/d.
p-Nitrophenol.—1s. 9d. per lb. 100 % basis d/d.
p-Nitro-*o*-amido-phenol.—4s. 6d. per lb. 100% basis.
m-Phenylene Diamine.—4s. 2d. per lb. d/d.
p-Phenylene Diamine.—10s. 3d. per lb. 100% basis d/d.
R. Salt.—2s. 6d. per lb. 100% basis d/d.
Sodium Naphthionate.—2s. 5d. per lb. 100% basis d/d.
o-Toluidine.—8¼d. per lb.
p-Toluidine.—3s. 6d. per lb. naked at works.
m-Toluylene Diamine.—4s. 6d. per lb. d/d.

Wood Distillation Products

All prices keep fairly stable, but there is room for improvement in business.

Acetate of Lime.—Brown, £14 10s. per ton d/d. Demand active. Grey, £19 to £20 per ton. Fair demand. Liquor, 9d. per gall. 32° Tw.
Charcoal.—£7 5s. to £9 per ton, according to grade and locality. Demand below normal.
Iron Liquor.—1s. 7d. per gall. 32° Tw. 1s. 2d. per gall. 24° Tw.
Red Liquor.—10d. to 1s. per gall. 14/15° Tw.
Wood Creosote.—2s. 7d. per gall. Unrefined.
Wood Naphtha, Miscible.—5s. per gall. 60% O.P. Market dull. Solvent, 5s. 6d. per gall. 40% O.P. Fairly good demand.
Wood Tar.—£5 per ton.
Brown Sugar of Lead.—£46 per ton.

Rubber Chemicals

Antimony Sulphide.—Golden, 5¾d. to 1s. 4d. per lb., according to quality. Crimson, 1s. 3d. to 1s. 6d. per lb., according to quality.
Arsenic Sulphide, Yellow.—1s. 11d. per lb.
Barytes.—£3 10s. to £6 15s. per ton, according to quality.
Cadmium Sulphide.—3s. 9d. per lb.
Carbon Bisulphide.—£24 to £26 per ton, according to quantity.
Carbon Black.—7d. per lb., ex-wharf. Dearer.
Carbon Tetrachloride.—£56 per ton, drums free.
Chromium Oxide, Green.—1s. 3d. per lb.
Indiarubber Substitutes, White and Dark.—4¾d. to 6¼d. per lb. Demand very brisk. Prices likely to remain steady owing to firmness of rapeseed oils.
Lamp Black.—45s. per cwt., barrels free.

Lead Hyposulphite.—7½d. per lb.
Lithopone, 30%.—£22 10s. per ton.
Mineral Rubber "Rubpron."—£15 10s. per ton f.o.r. London.
Sulphur.—£10 to £12 per ton, according to quality.
Sulphur Chloride.—3d. per lb., carboys extra.
Thiocarbanilide.—2s. 6d. per lb.
Vermilion, Pale or Deep.—4s. 10d. per lb.
Zinc Sulphide.—7½d. to 1s. 8d. per lb., according to quality.

Pharmaceutical and Photographic Chemicals

The demand for Pharmaceutical Chemicals is better for export to the British Dominions than for the Home Trade.
Acid, Acetic 80% B.P.—£47 per ton.
Acid, Acetyl Salicylic.—3s. 3d. Very heavy demand. Price firm.
Acid, Benzoic B.P.—3s. 6d. per lb. Larger supplies available, market easier.
Acid, Boric B.P.—Crystal £51 per ton, Powder £55 per ton. Carriage paid any station in Great Britain. Prices reduced by £3 per ton.
Acid, Camphoric.—19s. to 21s. per lb.
Acid, Citric.—1s. 6½d. per lb., less 5% for ton lots. Market extremely firm. Upward tendency.
Acid, Gallic.—3s. per lb. for pure crystal. Market very steady.
Acid, Pyrogallic, Crystals.—7s. per lb. for 1 cwt. lots. Market firm; increasing demand.
Acid, Salicylic.—1s. 6d. to 1s. 8d. per lb. Market still weak.
Acid, Tannic B.P.—3s. per lb. Market quiet.
Acid, Tartaric.—1s. 1½d. to 1s. 2d. per lb., less 5%. Better tone, but not yet very active. Cheap offers of second-hand parcels of foreign acid. Higher prices expected in view of firmness of raw materials.
Amidol.—9s. per lb. d/d.
Acetanilide.—2s. 3d. per lb. for quantity. Demand slow. Prices shaded to secure large orders.
Amidopyrin.—13s. 3d. per lb. Neglected. Stocks low.
Ammonium Benzoate.—3s. 3d. to 3s. 6d. per lb. according to quantity.
Ammonium Carbonate B.P.—£37 per ton.
Atropine Sulphate.—12s. 6d. per oz. for English make.
Barbitone.—15s. per lb. Quiet market.
Benzonaphthol.—5s. 3d. per lb. Small inquiry.
Bismuth Salts.—A steady market. Prices according to quantity.
Bismuth Carbonate.—12s. 9d. to 14s. 9d. per lb.
Bismuth Citrate.—11s. 4d. to 13s. 4d. per lb.
Bismuth Salicylate.—10s. 2d. to 12s. 2d. per lb.
Bismuth Subnitrate.—10s. 9d. to 12s. 9d. per lb.
Borax B.P.—Crystal £29, Powder £30 per ton. Carriage paid any station in Great Britain.
Bromides.—Potassium, 11d. per lb.; sodium, 1s. per lb.; ammonium, 1s. 1d. per lb. Prices vary. Local stocks are being cleared and forward prices are higher. There are rumours of a coming shortage and higher prices in Germany.
Calcium Lactate.—Demand active. Good English make can be had from 1s. 7d. to 2s. 6d. per lb.
Chloral Hydrate.—3s. 10d. per lb., in jars. Carboys 2d. less.
Chloroform.—2s. per lb. for cwt. lots. Market more active. Makers busy.
Creosote Carbonate.—6s. 6d. per lb. Little demand.
Formaldehyde.—£55 per ton, ex works. English make in casks. About 8s. per cwt. extra for carboys.
Glycerophosphates.—Fair business passing. Calcium, soluble and citrate free, 7s. per lb.; iron, 8s. 9d. per lb.; magnesium, 9s. per lb.; potassium, 50%, 3s. 6d. per lb.; sodium, 50%, 2s. 6d. per lb.
Guaiacol Carbonate.—11s. per lb. for cwt. lots. Slightly cheaper.
Hexamine.—3s. 6d. per lb. for English make. Market quiet and steady.
Homatropine Hydrobromide.—30s. per oz.
Hydrastine Hydrochloride.—English make offered at 120s. per oz.
Hydroquinone.—4s. 3d. per lb. in cwt. lots. Foreign make.
Hypophosphites.—Calcium, 3s. 6d. per lb. for 28 lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.
Iron Ammonium Citrate B.P.—2s. 1d. to 2s. 5d. per lb., according to quantity. Advanced by 2d. per lb.
Magnesium Carbonate.—Light Commercial, £36 per ton net.
Magnesium Oxide.—Light Commercial, £75 per ton, less 2½%; Heavy Commercial, £26 per ton, less 2½%; Heavy Pure, 2s. to 2s. 2d. per lb., according to quantity. Steady market.
Menthol.—A.B.R. recrystallised B.P., 52s. 6d. per lb. Weaker. Synthetic, 26s. to 31s. per lb., according to quantity. English make. Strong demand.
Mercurials.—Market firm. Red oxide, 5s. 3d. to 5s. 4d. per lb.; Corrosive sublimate, 3s. 6d. to 3s. 7d. per lb.; white precipitate, 4s. 7d. to 4s. 8d. per lb.; Calomel, 3s. 11d. to 4s. per lb.
Methyl Salicylate.—1s. 11d. to 2s. 1d. per lb. for carboys. Tendency still in buyers' favour.
Methyl Sulphonel.—26s. per lb.
Metol.—11s. per lb. British make.
Morphine and Salts.—Reduced by 1s. to 1s. 3d. per oz.
Paraformaldehyde.—3s. per lb. More inquiry.
Paraldehyde.—1s. 6d. per lb. in free bottles and cases, according to holder and quantity. Firmer.
Phenacetin.—6s. to 6s. 3d. per lb. Price and demand steady.
Phenazone.—7s. 3d. to 7s. 6d. for cwt. lots. Quiet.
Phenolphthalein.—6s. 6d. per lb. Easier, with supplies more plentiful.
Potassium Bitartrate 99/100% (Cream of Tartar).—88s. per cwt., less 2½% for ton lots. Firm market. Prices have upward tendency.
Potassium Citrate.—1s. 10d. to 2s. 2d. per lb. Dearer.
Potassium Iodide.—16s. 8d. to 17s. 5d. per lb., according to quantity. Demand continues.
Potassium Metabisulphite.—7½d. per lb., 1-cwt. kegs included.
Potassium Permanganate.—B.P. crystals, 8½d. to 9d. per lb., carriage paid; commercial, 8d. to 8½d. per lb., carriage paid.
Quinine Sulphate.—2s. 3d. per oz., in 100 oz. tins. Very heavy demand.
Resorcin.—5s. 6d. per lb. Firmer.
Saccharin.—63s. per lb. in 50-lb. lots.
Salol.—3s. 6d. to 3s. 11d. per lb. Easier in sympathy with other salicylates.
Silver Proteinate.—9s. 6d. per lb.
Sodium Benzoate, B.P.—2s. 9d. per lb. In quantity for British product.
Sodium Citrate, B.P.C., 1923.—1s. 11d. to 2s. 2d. per lb., according to quantity. Firmer in common with other citrates.
Sodium Hypophosphite, Photographic.—£13 to £15 per ton, according to quantity, d/d. consignee's station in 1-cwt. kegs.
Sodium Metabisulphite Crystals.—37s. 6d. to 60s. per cwt., net cash, according to quantity.
Sodium Nitroprusside.—16s. per lb. Less for quantity.
Sodium Potassium Tartrate (Rochelle Salt).—75s. to 82s. 6d. per cwt., according to quantity. Market steady, good demand.
Sodium Salicylate.—Powder, 2s. 2d. to 2s. 6d. per lb. Crystal, 2s. 4d. to 2s. 8d. per lb. Flake, 2s. 9d. lb. Market more active.
Sodium Sulphide, pure recrystallised.—10d. to 1s. 2d. per lb., according to quantity.
Sodium Sulphite, anhydrous, £27 10s. to £28 10s. per ton, according to quantity, 1 cwt. kegs included. In large casks £1 per ton less.
Thymol.—16s. 6d. per lb. Very scarce indeed, still rising.

Perfumery Chemicals

Acetophenone.—12s. 6d. per lb.
Aubepine.—14s. 6d. per lb.
Amyl Acetate.—2s. 9d. per lb.
Amyl Butyrate.—6s. 9d. per lb. Cheaper.
Amyl Salicylate.—3s. 3d. per lb.
Anethol (M.P. 21/22° C.).—4s. 6d. per lb.
Benzyl Acetate from Chlorine-free Benzyl Alcohol.—2s. 10½d. per lb. Cheaper.
Benzyl Alcohol free from Chlorine.—2s. 10½d. per lb.
Benzaldehyde free from Chlorine.—3s. 6d. per lb.
Benzyl Benzoate.—3s. 6d. per lb.
Cinnamic Aldehyde Natural.—15s. 6d. per lb.
Coumarin.—20s. per lb.
Citronellol.—16s. per lb.
Citral.—10s. per lb.
Ethyl Cinnamate.—15s. per lb.
Ethyl Phthalate.—3s. 3d. per lb. Reduced.
Eugenol.—10s. 6d. per lb. Cheaper.
Geraniol (Palmarosa).—35s. per lb.
Geraniol.—11s. to 18s. 6d. per lb.
Heliotropine.—7s. per lb. Advanced.
Iso Eugenol.—15s. 9d. per lb.
Linalol ex Bois de Rose.—26s. per lb. Cheaper.
Linalyl Acetate.—26s. per lb. Cheaper.
Methyl Anthranilate.—9s. 6d. per lb.
Methyl Benzoate.—6s. per lb.
Musk Ambrette.—43s. per lb. Cheaper.
Musk Xylol.—16s. 6d. per lb. Reduced.
Nerolin.—4s. 9d. per lb. Advanced.
Phenyl Ethyl Acetate.—12s. 6d. per lb.
Phenyl Ethyl Alcohol.—16s. per lb.
Rhodinol.—57s. 6d. per lb.
Safrol.—1s. 10d. per lb.
Terpineol.—2s. 4d. per lb. Cheaper.
Vanillin.—24s. to 24s. 9d. per lb. Price reduced, demand steady.

Essential Oils

Almond Oil, Foreign S.P.A.—15s. 6d. per lb.
Anise Oil.—2s. 8d. per lb. Cheaper.
Bergamot Oil.—19s. 6d. per lb. Dearer.
Bourbon Geranium Oil.—36s. 6d. per lb. Advanced.
Camphor Oil.—75s. per cwt.
Cananga Oil, Java.—10s. 6d. per lb.
Cinnamon Oil, Leaf.—6½d. per oz.
Cassia Oil, 80/85%.—8s. 9d. per lb. Cheaper.
Citronella Oil.—Java, 85/90%, 6s. per lb. Again dearer. Ceylon, 3s. 9d. per lb.
Clove Oil.—7s. per lb. Cheaper.
Eucalyptus Oil, 70/75%.—2s. per lb. Cheaper.
Lavender Oil.—French 38/40% Esters, 29s. per lb. Dearer.
Lemon Oil.—3s. per lb. Cheaper.
Lemongrass Oil.—3d. per oz.

Orange Oil, Sweet.—13s. 3d. per lb. Cheaper.
Otto of Rose Oil.—Bulgarian, 30s. per oz. Dearer. Anatolian, 26s. per oz. Dearer.
Palma Rosa Oil.—19s. per lb.
Peppermint Oil.—Wayne County, 20s. 9d. per lb. Cheaper. Japanese, 14s. 3d. per lb. Cheaper.
Petitgrain Oil.—9s. 6d. per lb. Cheaper.
Sandal Wood Oil.—Mysore, 26s. 6d. per lb. Australian, 21s. per lb

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, July 16, 1924.

DURING the past week the Chemical market has again been quiet, and with the near approach of holidays it is unlikely that there will be much movement in the Scottish Market within the next fortnight. Prices of home manufactured products remain fairly level, and quotations for continental material, notably acetic acid, are inclined to be lower.

Industrial Chemicals

ACETONE B.G.S.—The market remains very strong, and no supplies appear to be available for either prompt or early delivery.

ACID ACETIC.—Glacial, 98/100%, £59 to £70 per ton; 80% pure, £48 to £49 per ton; 80% technical, £44 to £46 per ton; all packed in casks delivered, c.i.f. U.K. ports, duty free.

ACID BORACIC.—Crystal or granulated, £45 per ton; powdered, £47 per ton; carriage paid U.K. stations, minimum ton lots.

ACID CARBOLIC, ICE CRYSTALS.—Remains unchanged at about 6½d. per lb., carriage paid or f.o.b. U.K. port.

ACID CITRIC, B.P. CRYSTALS.—Quoted 1s. 6¼d. per lb. less 5%, ex store, spot delivery. Offered for early delivery at 1s. 5¾d. per lb., less 5 % ex wharf.

ACID FORMIC, 85%.—Now quoted £56 per ton, ex store, spot delivery. Offered for forward delivery at about £55 per ton, ex wharf.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.

ACID NITRIC.—80°, £23 10s. per ton, ex station, full truck loads.

ACID OXALIC.—In little demand, price unchanged at 4¼d. per lb., ex store.

ACID SULPHURIC.—144°, £3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Now quoted 1s. 1¾d. per lb., less 5%, ex store. Offered for prompt shipment from the continent at 1¼d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE.—17/18% iron free. Spot lots now quoted £8 per ton, ex store. Offered for early delivery at about £7 5s. per ton, c.i.f. U.K. port.

ALUM CHROME.—Ammonium chrome alum quoted £19 to £21 per ton according to quality, f.o.b. U.K. port. Potash chrome alum on offer at £26 per ton, ex store.

ALUM POTASH (LUMP).—Spot lots quoted £9 7s. 6d. per ton, ex store. Offered from the continent at about £8 7s. 6d. per ton, c.i.f. U.K. port.

AMMONIA, ANHYDROUS.—Price inclined to be higher, now quoted 1s. 5¾d. to 1s. 6d. per lb., ex station, according to quality.

AMMONIA, CARBONATE.—Lump, £37 per ton, powdered £39 per ton, packed in 5 cwt. casks delivered U.K. port

AMMONIA LIQUID 880°.—Unchanged at 2½d. to 3d. per lb. delivered, according to quantity, containers extra.

AMMONIA, MURIATE.—Grey galvanisers quality unchanged at £30 per ton, ex station. Fine white crystals offered from the continent at £24 15s. per ton, c.i.f. U.K. port.

ARSENIC, WHITE POWDERED.—Moderate inquiry for export. Quoted £47 per ton, f.o.b. U.K. port, spot lots now quoted £51 to £52 per ton, ex store.

BARIUM CARBONATE, 98/100%.—Quoted £11 5s. per ton, c.i.f. U.K. port, prompt shipment.

BARIUM CHLORIDE, 98/100%.—English material unchanged at about £14 5s. per ton, ex store; continental on offer at £13 7s. 6d. per ton, c.i.f. U.K. port.

BARYTES.—Finest English white quoted £5 5s. per ton, ex works, continental about £5 per ton, c.i.f. U.K. port.

BLEACHING POWDER.—Spot lots £11 per ton, ex station; contracts 20s. per ton less.

BORAX.—Granulated, £24 10s. per ton; crystals, £25 per ton; powdered, £26 per ton, carriage paid U.K. stations, minimum ton lots.

CALCIUM CHLORIDE.—English material unchanged at £5 12s. 6d. per ton, ex station; continental rather higher at £5 per ton, c.i.f. U.K. port.

COPPERAS, GREEN.—Quoted £3 per ton, ex works, packed in casks.

COPPER SULPHATE.—Moderate inquiry. Spot material of continental manufacture quoted £24 5s. per ton, ex store; English material quoted £23 15s. per ton, f.o.b. U.K. port, for export.

FORMALDEHYDE, 40%.—Spot lots now quoted £54 per ton, ex store. Quoted £51 per ton, c.i.f. U.K. port, prompt shipment.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station, spot delivery. Offered from the continent at £3 2s. 6d. per ton, c.i.f. U.K. port.

LEAD, RED.—Imported material unchanged at £38 per ton, ex store.

LEAD, WHITE.—Spot lots now quoted £43 per ton, ex store. Offered from the continent at about £41 10s. per ton, c.i.f. U.K. port.

LEAD, ACETATE.—Moderate inquiry for export; English material quoted £46 per ton, f.o.b. U.K. port. Spot material of continental manufacture on offer at about £46 10s. per ton, ex store. Offered for early shipment from the continent at £45 10s. per ton, c.i.f. U.K. port.

MAGNESITE, CALCINED.—English material quoted £8 per ton, ex station, prompt delivery.

MAGNESIUM CHLORIDE.—Spot material unchanged at £3 17s. 6d. per ton, ex store. Offered from the continent at £3 10s. per ton, c.i.f. U.K. port, prompt shipment.

MAGNESIUM SULPHATE (EPSOM SALTS).—English material quoted £4 15s. per ton, ex store, spot delivery. B.P. quality on offer at about £6 5s. per ton, ex station.

POTASH, CAUSTIC, 88/92%.—Spot lots unchanged at about £29 10s. per ton, ex store. Quoted £29 per ton, c.i.f. U.K. port, prompt shipment from the continent.

POTASSIUM BICHROMATE.—Quoted 5½d. per lb. delivered.

POTASSIUM CARBONATE, 96/98%.—On offer from the continent at £23 10s. per ton, c.i.f. U.K. port; 90/94% quality, £21 15s. per ton, c.i.f. U.K. port. Spot lots of 96/98% quality on offer at £25 10s. per ton, ex store.

POTASSIUM CHLORATE.—Unchanged at about 2¾d. per lb., ex store.

POTASSIUM NITRATE (SALTPETRE).—Quoted £29 per ton, ex store, spot delivery. On offer from the continent at about £26 10s. per ton, c.i.f. U.K. port.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Now quoted 8½d. per lb., ex store, spot delivery. Commercial quality on offer at 7½ per lb., ex store.

POTASSIUM PRUSSIATE (YELLOW).—Price still further reduced, now quoted 7¾d. per lb., f.o.b. U.K. port or ex station.

SODIUM CAUSTIC.—76/77%, £19 7s. 6d. per ton; 70/72%, £17 17s. 6d. per ton; 60/62%, broken, £19 2s. 6d. per ton; 98/99%, powdered, £22 15s. per ton. All ex station, spot delivery. Contracts, 20s. per ton less.

SODIUM ACETATE.—Spot lots on offer at £24 per ton, ex store. Quoted £22 7s. 6d. per ton, c.i.f. U.K. port. prompt shipment from the continent.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station, M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—English material, 4¾d. per lb., delivered. American material on offer at 3¾d. per lb., c.i.f. U.K. port.

SODIUM CARBONATE.—Soda crystals, £5 to £5 5s. per ton, ex quay or station. Alkali, 58%, £8 12s. 3d. per ton ex quay or station.

SODIUM HYPOSULHHITE.—English material unchanged at £10 per ton ex station, continental offered at £9 15s. per ton ex store, spot delivery. Quoted £8 10s. per ton, c.i.f. U.K. port, prompt shipment, pea crystals of English manufacture quoted £13 15s. per ton, ex station.

SODIUM NITRATE.—95/96% quality, quoted £13 10s. per ton, f.o.r. or f.o.b. U.K. port, 96/98%, 7s. 6d. per ton extra.

SODIUM NITRITE, 100%.—On offer at £26 10s. per ton, ex store; 96/98% quality offered from the continent at £25 10s. per ton, c.i.f. U.K. port.

SODIUM PRUSSIATE (YELLOW).—Unchanged at about 4¼d. per lb., ex station or f.o.b. U.K. port.

SODIUM SULPHATE (SALTCAKE).—Price for home consumption, £3 10s. per ton, carriage paid buyers' station. Good inquiry for export, and price about £3 per ton, f.o.b. U.K. port.

SODIUM SULPHIDE.—60/62%, solid, of English manufacture, £14 15s. per ton, ex station; broken, £1 per ton more; flake, £2 per ton more; 60/62%, solid, offered from the continent at £12 5s. per ton, c.i.f. U.K. port; broken, £1 per ton more; 31/34%, crystals of English manufacture, £9 2s. 6d. per ton, ex station; 30/32%, crystals of continental manufacture, quoted £8 10s. per ton, c.i.f. U.K.

SULPHUR.—Flowers, £10 per ton; roll, £9 per ton; rock, £9 per ton; ground, £8 per ton. Prices nominal.

ZINC CHLORIDE, 96/98%.—English makers' price unchanged at about £27 5s. per ton, f.o.b. U.K. port; 98/100% quality offered from the continent at £24 10s. per ton, c.i.f. U.K. port.

ZINC SULPHATE.—English material unchanged at £13 10s. per ton, ex station, on offer from the continent at £11 per ton, c.i.f. U.K. port.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Coal Tar Intermediates and Wood Distillation Products

ALPHA METHYL AMINO ANTHRAQUINONE.—Some inquiry, price quoted 30s. 9d. per lb., delivered.

BETA NAPHTHYLAMINE.—Some inquiry, price quoted 4s. per lb., delivered.

DIETHYLANILINE.—Good inquiry, price quoted 4s. 6d. per lb., delivered, drums returnable.

DIETHYLAMINE.—Some inquiry, price quoted 21s. 3d. per lb., delivered.

J. ACID.—Fair inquiry, price quoted 6s. per lb., 100% basis.

NITRO NAPHTHALENE.—Some inquiry, price quoted 10½d. per lb., delivered.

PARANITRANILINE ORTHO SULPHO ACID.—Some inquiry, price quoted 4s. 9d. per lb., 100% basis, delivered.

SULPHANILIC ACID.—Some inquiry, for export, price 9¾d. per lb., 100% basis, f.o.b.

The Manchester Chemical Market

[FROM OUR OWN CORRESPONDENT.]

Manchester, July 17, 1924.

BUYING of heavy chemicals during the past week has in many cases been on quiet lines. For home consumption purposes business has been chiefly for spot requirements. The demand for textile chemicals is likely to be on a restricted scale for some time in view of the probability of a continuance of the short-time movement in the American section of the cotton industry. Export demand is of small dimensions and is confined largely to business on colonial account. Prices generally show little variation from last week, although the tendency in many instances is distinctly easy.

Heavy Chemicals

Prussiate of soda continues to attract small attention, with values easy but about unchanged at 4¼d. to 4½d. per lb. Saltcake is quoted at £3 10s. per ton for home consumption and about £3 5s. for shipment; the demand in both sections is quiet. Chlorate of soda is steadier but still inactive at 2½d. to 2¾d. per lb. Caustic soda is firm at from £16 17s. 6d. for 60 per cent. material to £19 7s. 6d. per ton for 76-77 per cent.; a fair amount of business is being done both for home and export. Sodium sulphide is rather quiet but steady at £14 10s. per ton for 60-65 per cent. concentrated solid and round £9 10s. for crystals. The demand for bleaching powder is subdued, but current values are unchanged at £10 per ton. Acetate of soda is still offering at £23 to £23 10s. per ton. Hyposulphite of soda is quiet but fairly steady at £14 5s. per ton for photographic crystals and £9 5s. to £9 10s. per ton for commercial. Alkali is in moderate inquiry and prices are fully maintained at round £6 15s. per ton. Glauber salts are quoted at round £3 10s., but the demand for this material continues on quiet lines. Phosphate of soda is fairly steady at £13 10s. to £14 per ton. Soda crystals are unchanged at £5 5s. per ton, but little improvement in the demand can be reported. Bichromate of soda is steady and in moderate inquiry at 4¼d. per lb. Bicarbonate of soda is unchanged in value at about £10 10s. per ton, a quietly steady demand being met with.

Caustic potash is rather quiet at £29 to £30 per ton for 90 per cent. strength. Carbonate of potash is also only in moderate demand and values have a slightly easier tendency, about £22 10s. per ton now being quoted. Chlorate of potash is steady at 2¾d. per lb., but sales are slow. Permanganate of potash is in quiet demand at 7d. to 7¾d. per lb. according to quality. Yellow prussiate of potash is inactive and values are weaker, to-day's quotation being about 7½d. per lb. Bichromate of potash is steady and in fair inquiry at 5½d. per lb.

The demand for arsenic shows little or no improvement and this, coupled with offers of foreign material at lower prices, is keeping values at comparatively low levels; white powdered, Cornish makes, is currently quoted at round £48 per ton, Manchester. Sulphate of copper is quiet and easy at £24 5s. to £24 10s. per ton, f.o.b. Acetate of lime is only in small demand; grey material is quoted at £18 and brown at £13 per ton. Commercial Epsom salts are steady and in fair request at £4 15s. to £5 per ton; magnesium sulphate, B.P., is offering at £6 10s. Nitrate of lead is about unchanged from last week at £42 to £43 per ton. White acetate of lead is rather inactive at £47 per ton; brown is quoted at £45.

Acids and Tar Products

Tartaric acid is steady and in fair demand at 1s. 2d. per lb. Citric acid is maintained at about 1s. 6d. per lb. Oxalic acid is attracting only a limited amount of attention and quotations are weak at from 4½d. to 4¾d. per lb. Acetic acid is steady at £47 per ton for 80 per cent. technical and round £70 per ton for glacial.

Pitch is selling very slowly and values are more or less nominal at £2 17s. 6d. to £3 per ton Manchester. Cresylic acid keeps steady at 2s. per gallon. Creosote oil is quiet but unchanged from last week at 6½d. to 6¾d. per gallon. Solvent naphtha is only in moderate demand at 1s. 3½d. to 1s. 4d. per gallon. Carbolic acid is steadier than it has been recently, crystals being quoted at about 7d. per lb. and crude at round 2s. per gallon. Naphthalenes are inactive at £16 to £17 per ton for refined and from £5 per ton for crude qualities.

Nitrogen Products Market

WITH the advent of the summer months the market for nitrogen has resumed its usual somewhat slack appearance, and interest is now chiefly centred on the course of prices for forward delivery.

The Chilean Nitrate Association has succeeded in effecting remarkable sales for shipment up to the end of December, for which period approximately half the total estimated production for next season has been sold, the actual figure being about 1,300,000 tons. The lowest price at which further quantities of nitrate can be bought works out at about £12 5s. to about £12 10s. per ton c.i.f. European ports.

Stocks in Chile are normal and show a reduction of about 40 per cent. compared with 1922. These purchases have been made in the expectation of a largely increased consumption in the United States. It is thought that the American cotton growers may add about five million acres to the cotton growing land this year, with a view to competing with the British Government's efforts to increase the supply of cotton within the Empire, and this, of course, should mean a largely increased demand for nitrogen.

In comparison with nitrate, the sulphate of ammonia market has been rather weak, and this no doubt accounts for the heavy reduction in price, amounting to 25s. per ton, which the federated makers at home have made for home consumption. The present price for July/August delivery in 4-ton lots, carriage paid to consumer's station, is £14 per ton for 21·1 per cent. nitrogen. As the present retail price for nitrate of soda is about £13 to £13 10s. per ton for 15½ per cent. nitrogen, it will be seen that consumers can obtain their nitrogen very much cheaper by buying sulphate of ammonia.

It would appear that this fact has been realised by the home farmer as preliminary estimates indicate that there has been a substantial increase in the consumption of sulphate of ammonia in the home market during the past season.

As regards exports, while Far Eastern markets still remain quiet considerable business has been done with France and Spain for prompt and forward at approximately the parity of the reduced home price.

Tariff Changes

DENMARK.—Alterations have been made as regards mineral oils, including an alteration of the flashpoint limit.

URUGUAY.—A resolution re-imposes the duty of 8 per cent. *ad valorem* on pure and commercial sulphuric acid imported into Uruguay. This duty has been suspended since 1912. The resolution also recommends the General Assembly to increase the duty to 31 per cent. *ad valorem*.

BELGIUM.—A Government Bill proposes to modify the duties on certain alcoholic products in Belgium. It also proposes to abolish the additional tax of 16 per cent. of the import duty levied on foreign spirits and similar alcoholic liquors imported into Belgium, as well as the corresponding Excise duty on native spirits. Further provisions relate to Excise duties on alcohol produced in Belgium.

Company News

CANADIAN EXPLOSIVES, LTD.—A dividend of 1¾ per cent. has been declared for the quarter to June 30 last, on the 7 per cent. cumulative preferred shares.

JURGENS, LTD.—The transfer books of the company relating to the (Guaranteed) 7 per cent. cumulative participating preference shares closed yesterday and will remain closed until July 31, both days inclusive.

BURT, BOULTON AND HAYWOOD, LTD.—The lists in connection with the offer for sale of £300,000 first mortgage 6 per cent. debenture stock were closed on Wednesday, the offer having been fully subscribed.

ELECTROLYTIC ZINC CO. OF AUSTRALIA.—A dividend at the rate of 9 per cent. per annum for the six months to June 30 last has been declared on the preference and the ordinary shares, against an interim at the rate of 8 per cent. per annum a year ago.

Ebonite Resistant to Chlorine

Chemical Patent Extended

MR. JUSTICE TOMLIN, in the Chancery Division on Friday, had before him a summons by Dr. Meyer Wilderman, a research chemist, of Fellows Road, Hampstead, that the period of his patent relating to "Improvements in processes for the manufacture of ebonite capable of resisting the action of chlorine" might be extended, on the ground that he had been unable to work it owing to the war and that he had suffered loss and damage thereby.

Mr. Courtney Terrell, who appeared for the applicant, said the principal application of the ebonite was to those cells that were used for the electrolytic decomposition of common salt for the purpose of making caustic soda, or in which potassium chloride was electrolysed to make caustic potash. Dr. Wilderman, who was a Roumanian subject, was a Doctor of Philosophy and a Bachelor of Science of Oxford. The late Dr. Ludwig Mond, then head of Brunner, Mond and Co., greatly assisted him in the development of his purely scientific work. When he had hit upon a process of producing an ebonite which would resist the action of chlorine he entered into an agreement by which he granted a licence to Brunner, Mond and Co. to work the caustic soda process. But although they acquired the patent he was instructed that they did not work it. He also wanted his ebonite patent worked, and before the war he entered into contracts with Hugo Stinnes to work the patents in Germany. He was in Germany when war broke out, and he now had litigation pending before the Mixed Arbitral Tribunal in Paris against the Stinnes group.

Dr. Wilderman, in the witness box, said he entered into his first contract with Stinnes in November, 1912. That was for the working of his caustic soda patent. He went backwards and forwards between Germany and this country, but always made his home here. The contract came to an end in 1915. While he was a prisoner of war Stinnes forced him to sign documents transferring to him (Stinnes) all his rights in his German patents. During the war he paid the fees necessary to keep his English patents alive. He did no work for the Germans, spending his time chiefly on a book on electrolysis. His contract with Stinnes was not renewed when it ended in 1915. If there had not been a war he would have been in a position to force Brunner, Mond and Co. to work his patents. The present patent expired on August 31 this year.

His lordship said that after hearing Dr. Wilderman's evidence he would extend the term of the patent for three years.

The "Official Disinfectant" at Wembley

BEFORE Mr. Justice Tomlin, in the Chancery Division on Friday, Mr. Archer, K.C., moved on behalf of Milton Proprietary, Ltd., for an injunction restraining Newton, Chambers and Co., Ltd., from announcing that their disinfectant "Izal" had been officially adopted as the disinfectant for the Wembley Exhibition. He said his case was that "Milton" occupied that favourable position. Mr. Spens, for the defendants, said they would welcome an opportunity of meeting the attack, and he promised to produce his evidence in answer to that of the plaintiffs as soon as possible. The motion was adjourned for a week.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, 51 and 52, Chancery Lane, W.C.2, from whom further information may be obtained.

Opposition to the registration of the following Trade Mark can be lodged up to August 2, 1924.

447,992. For chemical substances prepared for use in medicine and pharmacy. Chas. Zimmermann and Co. (Chemicals), Ltd., 9–10, St. Mary-at-Hill, London, E.C.3, chemical merchants. May 1, 1924. (To be associated. Sect. 24.)

Opposition to the registration of the following Trade Mark can be lodged up to August 9, 1924.

"FELTITE."

445,581. For paints and non-calcareous cements included in Class I. Montgomerie, Stobo and Company, Limited, Victory Works, George Street, Bridgeton, Glasgow; manufacturers. February 21, 1924.

Opposition to the registration of the following Trade Marks can be lodged up to August 16, 1924.

"CANNING."

444,982. For chemicals included in Class 1, for use in electro-plating, lacquering, burnishing, bronzing, dipping and enamelling operations. W. Canning and Co., Ltd., 133 to 137, Great Hampton Street, Birmingham; manufacturers. January 31, 1924. (To be associated. Section 24.) Advertised before acceptance, the applicants alleging distinctiveness.

"ISOMERPIN."

446,806. For chemical substances used in manufactures, photography or philosophical research, and anti-corrosives. Chemische Fabrik Pott and Co. (a limited liability company organised under the laws of Germany), Priessmitzstrasse 39, Dresden, N., Germany; manufacturers. March 25, 1924.

"PERMOTINT."

448,762. For chemical substances used in manufactures, photography or philosophical research, and anti-corrosives. Robert Bowran and Co., Ltd., 4, St. Nicholas' Buildings, Newcastle-on-Tyne; engineers. May 28, 1924.

"ROMAC."

448,347. For raw or partly prepared vegetable, animal and mineral substances used in manufactures, not included in other Classes. Class 4. Leslie Allan and Co., Ltd., Rainford Works, Rainford, Lancashire; refiners and distillers of petroleum and tar products. May 14, 1924.

Germany's Dye Industry

ACCORDING to Thomas W. Delehanty, of the American Chemical Division, Bureau of Foreign and Domestic Commerce, the present position of Germany's dye industry as contrasted with pre-war days, accounts for the keen desire on the part of the Cartel to come to agreements with competitors to buy out interests of major factors, or start factories in competing countries in order to obtain the proportion of the trade to which it believes it is entitled. As now constituted, Germany is not completely self-supporting, and has to look to the rest of the world more and more for essentials since expansion within the Cartel is controlled by the natural resources of Germany. In order to justify production on a large scale, Germany is working out new uses, utilizing by-products, and fostering trade-mark and industrial specialities. The scope of the last-named has been tremendously expanded, as evidenced by the fact that to-day the Cartel not only produces all dyestuffs used in Germany, but also heavy chemicals, fertilizers, and over 50 per cent. of the pharmaceutical chemicals.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[*NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*]

TANNER (L.) AND CO., 12, Station Road, Horrabridge, polish manufacturers. (C.C., 19/7/24.) £18 12s. 5d. March 28th.

BERGIN, Mrs. (trading as MARGERY LEIGHTON), 35, Gray's Inn Road, W.C., manufacturing chemist. (C.C., 19/7/24.) £14 4s. 10d. June 10th.

LONDON CHEMICAL WORKS, LTD., Scotts Road, Southall, chemical manufacturers. (C.C., 19/7/24.) £20 18s. 5d. March 31st.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

BLAKER (E. J.), LTD., Haslemere, chemists. (M., 19/7/24.) Registered July 4th; mortgage to bank; charged on property at High Street, Haslemere. *Nil. May 30th, 1923.

DIMMOCK (ARTHUR T.), LTD., London, W.C., chemical merchants. (M., 19/7/24.) Registered July 1st, £3,500 debenture to W. Cullen, The Crossways, Surbiton, consulting chemist; general charge. *Nil. January 14th, 1924.

KOKO-MARICOPAS CO., LTD., London, E.C., manufacturers of Koko for the hair. (M., 19/7/24.) Registered July 7th, £1,000 debentures (secured by trust deed dated June 16th, 1924); general charge, including trade marks, etc., and prescription and all improvements and additions thereto for Koko for the hair. *Nil. January 24th, 1924.

MERCER AND PARK, LTD., Great Harwood, chemica manufacturers. (M., 19/7/24.) Registered June 30th, £444 and further advances mortgage, to building society; charged on property in Club Street, Great Harwood.

OREANU (JOSEPH), LTD. (late J. OREANU, LTD.) London, E.C., drug manufacturers. (M., 19/7/24.) Registered July 4th, £4,000 debenture., to Hales, Hancock and Godwin, Ltd., Gamage Building, Holborn; general charge.

Satisfactions

WILLOW DYE WORKS, LTD. (late WILLOW LAUNDRY DYEING AND DRY CLEANING CO., LTD.), Leicester. (M.S., 19/7/24.) Satisfaction registered July 5th, all moneys, etc., registered May 18th, 1923.

London Gazette

Companies Winding Up Voluntarily

FRATER (GEO. A.) AND CO., LTD. (C.W.U.V., 19/7/24.) C. Linder, 18, Billiter Street, London, E.C., appointed liquidator. Meeting of creditors at the offices of the liquidator, on Thursday, July 24th, at 12 noon.

CHEMICAL AND ENGINEERING PRODUCTS, LTD. (C.W.U.V., 19/7/24.) W. B. Anderson, 40, Norfolk Street, Strand, W.C., chartered accountant, appointed liquidator. Meeting of creditors, Room 209, 40, Norfolk Street, Strand, W.C.2, at 2.30 p.m., July 29th. Creditors' claims by August 19th.

PARREN'S PHARMACIES, LTD. (C.W.U.V., 19/7/24.) P. S. Booth, 19, Kimberley House, Holborn Viaduct, London, E.C.1, appointed liquidator.

New Companies Registered

BARRY BROTHERS, LTD., 41, North John Street, Liverpool. Dealers in pharmaceutical, medicinal, chemical industrial and other preparations, etc. Nominal capital, £40,000 in £10 shares.

CLEVELAND PRODUCT CO., LTD. Manufacturers of glue, gelatine, grease and fertilisers. Nominal capital £6,000 in £1 shares. A director: A. E. Schellenberg, Newholme, Marton, Yorks.

HOUGH HOSEASON AND CO., LTD., Sun Buildings, Bridge Street, Manchester. Manufacturing chemists, druggists, drysalters, oil and colourmen, etc. Nominal capital, £60,000 in £1 shares.

MOORE AND GEORGE, LTD., 181, Queen Victoria Street, London. Analytical chemists, petroleum and fuel technologists, etc. Nominal capital, £2,000 in 1,800 6 per cent. cumulative preference shares of £1 each and 2,000 ordinary shares of 2s. each.

THERAPEUTIC PRODUCTS, LTD., 71, High Holborn, London. Chemists, chemical manufacturers, etc. Nominal capital, £3,000 in £1 shares.

UNITED LUBRICANTS, LTD., 8, King William Street, London, E.C., manufacturers, refiners, blenders, and dealers in all kinds of oils and greases, varnishes, soaps, chemicals, etc. Nominal capital £120,000 in 100,000 8 per cent. cumulative preference shares of £1 each and 400,000 ordinary shares of 1s. each.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

CHEMICAL PRODUCTS, ORES, ETC.—A firm in Brussels desires to secure the representation or management of a branch establishment in Brussels, of British exporters of chemical products, ores (zinc, lead, copper, iron and manganese), and phosphates for fertilisers. Correspondence in English. (This is a repetition of a notice which appeared in the "Journal" of February 7.) (Reference No. 48.)

COPRA.—A Milan firm of commission agents desires to represent a first-class British house exporting the above goods. (Reference No. 54.)

SOAP FOR MALTA.—A firm of merchants and agents in Malta desires the representation of a British manufacturer of soap. They have well-established connections in the island of Malta, and are in touch with the general import trade there. Reference No. 90.

RAW MATERIALS.—An old-established agent (Australian) in Hamburg desires to obtain the representation for Germany of British and Colonial exporters of jute, shellac, copra and oil seeds. Reference No. 94.

MINING PLANT FOR CHILE.—A Chilean lead mining and smelting company who contemplate increasing their plant shortly, are desirous of receiving catalogues with full particulars and prices from British manufacturers of grinders, tables and other mining machinery. Reference No. A.X./r,117.

Patent Fuel Co.'s Voluntary Liquidation

A MEETING of the creditors of the Reliance Fuel Co., Ltd., patent fuel manufacturers of Llanelly and London, was held on July 15, at Winchester House, Old Broad Street, London, E.C. The balance sheet showed that the company had a nominal capital of £375,000. The liabilities of the company totalled £690,216, the principal items being, share capital issued £338,286; loans and interest outstanding £275,480; and sundry creditors £74,758. Debentures for £300,000 bearing interest at the rate of 8 per cent. per annum had been issued by the company, of which approximately £170,000 was outstanding. It was estimated that the assets would only realise about £60,000, and the receiver and manager was disposing of the assets under the supervision of the Court, but there was no prospect of the creditors receiving anything.

A resolution was passed confirming the appointment of Mr. Yeoman, of 17, Throgmorton Avenue, London, E.C., as the liquidator of the Company.